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NEW DELHI, SATURDAY, APRIL 1, 1950

NOTICE

The undermentioned Gazettes of India Extraordinary were published during the week ending the 27th March 1950 :—

S. No.	No. and Date	Issued by	Subject
1	No. 1(19)-ITC/50, dated the 18th March 1950.	Ministry of Commerce	Import of raw silk and silk waste yarn for January-June 1950.
2	No. 893-TG/C., dated the 16 March 1950 .	Ministry of Railways	Appointment of a Claims Commissioner to deal with claims arising out of the accident to No. 1 Down Madras-Calcutta Mail.
3	Nos. LR-2(260)/I & II, dated the 22nd March 1950.	Ministry of Labour	Award of the All India Industrial Tribunal (Bank Disputes) in the matter of alleged victimization, wrongful dismissal, etc., of workmen of certain banking companies in the States of Punjab and Delhi; and Order of Government declaring that the said award shall be binding upon the parties, and shall come into operation on 22nd March 1950 and shall remain in operation for one year.
4	No. 51-TAG(1)/50, dated the 27th March 1950.	Ministry of Transport	Appointment of the 1st day of April 1950 as the date on which the Delhi Road Transport Authority shall be established.

Copies of the Gazettes Extraordinary mentioned above will be supplied on indent to the Manager of Publications, Civil Lines, Delhi. Indents should be submitted so as to reach the Manager within ten days of the date of issue of this Gazette.

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PART I—Section 1

Notifications relating to Non-Statutory Rules, Regulations and Orders and Resolutions issued by the Ministry of the Government of India (other than the Ministry of Defence)

PARLIAMENT SECRETARIAT

New Delhi, the 27th March 1950

No. F.16-II/50-L.B.—Shri V. T. Krishnamachari, an elected member of Parliament from Rajasthan, has resigned his seat in Parliament with effect from the 27th March 1950.

M. N. KAUL, Secy.

MINISTRY OF HOME AFFAIRS

New Delhi, the 25th March 1950

No. 54/3/50-NGS.—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President is pleased to direct that the following amendments shall be made in the Central Civil Services (Temporary Service) Rules, 1949, namely:—

In the said Rules,—

(1) to rule 5, the following provisos shall be added, namely:—

“Provided that the service of any such Government servant may be terminated forthwith by payment

to him of a sum equivalent to the amount of his pay plus allowances for the period of the notice or, as the case may be, for the period by which such notice falls short of one month or any agreed longer period.

Provided further that the payment of allowances shall be subject to the conditions under which such allowances are admissible.”

(2) rule 6 shall be renumbered as sub-rule (1) of that rule, and after the sub-rule as so renumbered the following sub-rule shall be added, namely:—

“(2) Nothing in this rule shall affect any special instructions issued by Government regarding the manner and the order in which temporary Government servants belonging to any Scheduled Caste may be discharged.”

R. C. DUTT, Dy. Secy.

MINISTRY OF FINANCE

(Department of Economic Affairs)

New Delhi, the 22nd March 1950

No. D. 1634-F.111/50.—Statement of the Affairs of the Reserve Bank of India, as on the 17th March 1950.

BANKING DEPARTMENT

LIABILITIES		Rs.	ASSETS		Rs.
Capital paid up	.	5,00,00,000	Notes	.	20,10,00,000
Reserve Fund	.	5,00,00,000	Rupee Coin	.	7,36,000
Deposits:—			Subsidiary Coin	.	1,80,000
(a) Government			Bills Purchased and Discounted:—		
(1) Central Government	.	132,68,20,000	(a) Internal	.	90,00,000
(2) Other Governments	.	42,76,09,000	(b) External	.	
(b) Banks	.	51,30,46,000	(c) Government Treasury Bills	.	88,43,000
(c) Others	.	63,57,09,000	Balances held abroad*	.	204,57,26,000
Bills Payable	.	5,93,30,000	Loans and Advances to Governments	.	72,00,000
Other Liabilities	.	14,55,20,000	Other Loans and Advances	.	10,01,89,000
			Investments	.	77,74,80,000
			Other Assets	.	4,87,40,000
	Rupees	320,80,04,000		Rupees	320,80,04,000

*Includes Cash & Short-term Securities.

An Account pursuant to the Reserve Bank of India Act, 1934, for the week ended the 17th day of March 1950.

ISSUE DEPARTMENT

LIABILITIES	Rs.	Rs.	ASSETS	Rs.	Rs.
Notes held in the Banking Department.	20,10,00,000		A.—Gold Coin and Bullion:—		
Notes in circulation	1161,18,84,000		(a) Held in India	40,01,71,000	
Total Notes issued		1181,28,84,000	(b) Held outside India	..	
			Foreign Securities	650,34,38,000	
			Total of A		690,36,09,000
			B.—Rupee Coin		50,85,87,000
			Government of India Rupee Securities		440,27,18,000
			Internal Bills of Exchange and other commercial paper		..
Total Liabilities		1181,28,84,000	Total Assets		1181,28,84,000

Ratio of Total of A to Liabilities : 58·441 per cent.

Dated the 22nd day of March 1950.

B. RAMA RAU, Governor

K. G. AMBEGAOKAR, Secy.

CENTRAL BOARD OF REVENUE

INCOME-TAX

New Delhi, the 25th March 1950

No. 40.—The following draft of a further amendment to the Indian Income-tax Rules, 1922, which the Central Board of Revenue proposes to make in exercise of the powers conferred by sub-section (1) of section 59 of the Indian Income-tax Act, 1922 (XI of 1922), is published as required by sub-section (4) of the said section for the information of all persons likely to be affected thereby and notice is hereby given that the said draft will be taken into consideration on or before the 8th May 1950. Any objection or suggestion which may be received from any person with respect to the said draft before the date specified will be considered by the said Board.

Draft Amendment

In the statement annexed to rule 8 of the said Rules, under head "III Machinery and Plant"—

A. In sub-head (2)—

I. In group A—

(1) for the words and asterisk "Flour Mills*" occurring against item (i), the words "Flour Mills except rollers" shall be substituted.

(2) for the words and asterisk "Sugar Works*" occurring against item (iv), the words "Sugar Works except rollers" shall be substituted.

(3) for the words and asterisks "Match Factories**" occurring against item (viii), the words "Match Factories except wooden match frames" shall be substituted.

(4) the remarks in column 3 against items (i) to (xii) shall be omitted, and

(5) the following items shall be added after item (xii), namely:—

“(xiii) Rollers used in Flour Mills and Sugar Works.	Nil.	The cost of replacement of the rollers will be allowed as revenue expenditure.
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(xiv) Wooden Match Frames used in Match Factories.	Nil.	The cost of replacement of the frames will be allowed as revenue expenditure.”
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II. In group B—

(1) for the words and asterisk "Iron and Steel Industry*" occurring against item (xxx), the words "Iron and Steel Industry except rolling mill rolls" shall be substituted.

(2) the remarks in column 3 relating to item (xxx) shall be omitted.

(3) the following item shall be inserted after item (xxx), namely:—

“(xxxa) Rolling mill rolls used in Iron and Steel Industry.	Nil.	The cost of replacement of the rolling mill rolls will be allowed as revenue expenditure.”
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B. In sub-head (3)—

III. In group D—

(1) for the words and asterisk "studio lights*" occurring at the end of item (i), the following words shall be substituted, namely:—

“studio lights except bulbs.”

(2) the remarks in column 3 against item (i) shall be omitted.

(3) the following item shall be added after item (ii), namely:—

“(iii) Bulbs of studio lights.	Nil.	Renewals of bulbs will be allowed as revenue expenditure.”
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IV. In group H—

against the item "1. Returnable packages" in the category "Distribution", in column 2 the word "Nil" shall be inserted.

V. In group J—

(1) in the second column against item (ii) the word "Nil" shall be inserted.

(2) in the second column against item (v) the word "Nil" shall be inserted.

VI. In group O—

(1) for the words and asterisk "Artificial Silk Manufacturing Machinery*" against item (xi), the words "Artificial Silk Manufacturing Machinery except the wooden parts" shall be substituted.

(2) the remarks in column 3 against item (xi) shall be omitted.

(3) the following item shall be inserted after item (xi), namely:—

“(xia) Wooden parts of the plant and machinery used for the manufacture of artificial silk.	Nil.	The cost of replacement of the wooden parts will be allowed as revenue expenditure.”
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VII. In group T—

(1) for the words and asterisk "Glass Manufacturing concerns*" the words "Glass Manufacturing concerns except Direct Fire Glass melting Furnaces" shall be substituted.

(2) the remarks in column 3 shall be omitted.

(3) the following item shall be added after item (ii), namely:—

“(iii) Direct Fire Glass melting Furnaces.	Nil.	Replacement of the furnaces will be allowed as revenue expenditure.”
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New Delhi, the 1st April 1950

No. 42.—In pursuance of sub-section (6) of section 5 of the Indian Income-tax Act, 1922 (XI of 1922), the Central Board of Revenue directs that the following further amendments shall be made in its notification No. 13—Income-tax, dated the 12th February 1949, namely:—

In the schedule appended to the said notification—

(i) serial number 21 shall be omitted;

(ii) after serial number 53, the following item shall be inserted, namely:—

1	2	3	4	5	6
53—A	Employees of the Rajputana Minerals Co. Ltd.	Income-tax Officer, Salary Circle, Delhi.	Inspecting Assistant Commissioner of Income-tax, Delhi.	Appellate Assistant Commissioner of Income-tax, 'A' Range, Delhi	Commissioner of Income-tax, for the States of Delhi and Ajmer, Delhi.

(iii) in columns 4, 5 and 6 against serial numbers 44, 45, 49, 50, 55 and 56 for the existing entries the following entries shall be substituted, namely:—

4	5	6
Inspecting Assistant Commissioner of Income-tax, Amritsar.	Appellate Assistant Commissioner of Income-tax, Ambala,	Commissioner of Income-tax, for the States of Punjab, Himachal Pradesh and Bilaspur

(iv) in column 6 against serial numbers 46, 47, 48, 51, 52, 53, 54 and 57, for the existing entries the following entries shall be substituted, namely:—

“Commissioner of Income-tax for the States of Delhi and Ajmer, Delhi”.

EXCESS PROFITS TAX

New Delhi, the 25th March 1950

No. 41.—In exercise of the powers conferred by Section 27 of the Excess Profits Tax Act, 1940 (XV of 1940), the Central Board of Revenue directs that the following further amendment shall be made in the Excess Profits Tax Rules, 1940, the same having been previously published as required by sub-section (3) of the said Section, namely:

To clause (xvii) of rule 3 of the Excess Profits Tax Rules, 1940, the following proviso shall be added, namely—

Provided that where the claim relates to relief under section 11 of the Act, it shall not be allowed unless it is made—

- either within four years from the last day of the said financial year,
- or within one year from the date of assessment to excess profits tax in the taxable territories,
- or within one year from the date of assessment to excess profits tax in the other country referred to in section 11 of the Act,

whichever is the later.

PYARE LAL, Secy.

CUSTOMS

New Delhi, the 25th March 1950

No. 22.—In exercise of the powers conferred by section 12 of the Sea Customs Act, 1878 (VIII of 1878), the Central Board of Revenue declares the following places in the State of Madras to be ports for the carrying on of coasting trade with Customs-ports generally and for no other purpose, namely:—

- Narsapur in the West Godavari District.
- Nizampatnam in the Guntur District.

D. P. ANAND, Secy.

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA

New Delhi, the 24th March 1950

No. 13-OA(12)/49.—With reference to the Notification of the Government of India in the Department of Commerce, No. 12-A(2)/39, dated the 29th July, 1939, it is hereby notified that in exercise of the powers conferred by Regulation 13 of the Chartered Accountants Regulations, 1949, the Council of the Institute of Chartered Accountants of India is pleased to restore to the Register of Members with effect from 21st March, 1950, the following name, namely:—

Membership No.	R. A. Enrolment No.	Name
1674	430	Chaudhuri Narendra Bijay, 153, Ahlone Strand Road, Rangoon, Burma.

New Delhi, the 25th March 1950

No. 12-OA(1)/50.—In pursuance of Regulation 12 of the Chartered Accountants Regulations, 1949, it is hereby notified that in exercise of the powers conferred by clause (b) of sub-section (1) of section 20 of the Chartered Accountants Act, 1949, the Council of the Institute of Chartered Accountants of India is pleased to remove the name of the undermentioned gentleman with effect from 1st July 1949 from the Register of Members.

S. No.	Membership No.	R. A. Enrolment No.	Name
Removed for non-payment of annual membership fee under clause (b) of sub-section (1) of Section 20 of the Act.			
1	1676	1302	Dinshah Behremji Morris, Tafi Bldg., Grant Road, Bombay 7. (Present address: Office of the High Commissioner for India, Naval Advisor's Department, India House, Aldwych, London, W.C. 2)

G. P. KAPADIA, President.

MINISTRY OF INDUSTRY AND SUPPLY

Bombay, the 18th March 1950

No. 9(9)-Tex. 1/49.—In exercise of the powers conferred on me by clause 33 of the Cotton Textiles (Control) Order, 1948 and with reference to sub-clause (2) of clause 25 of the said Order, I hereby direct that the following amendment shall be made in the Textile Commissioner's Notification No. 9(9)-Tex. 1/49 dated the 31st December 1949, namely:—

In the said notification for the word, letters and figures "31st March 1950" the word, letters and figures "30th April 1950" shall be substituted.

No. 9(9)-Tex. 1/49(i).—In exercise of the powers conferred on me by clause 33 of the Cotton Textiles (Control) Order, 1948 and with reference to sub-clause (2) of clause 25 of the said Order, I hereby direct that the following amendment shall be made in the Textile Commissioner's Notification No. 9(9)-Tex. 1/49 (i) dated the 31st December 1949, namely:—

In the said notification for the word, letters and figures "31st March 1950" the word, letters and figures "30th April 1950" shall be substituted.

T. P. BARAT,
Textile Commissioner.

New Delhi, the 23rd March 1950

No. 37.—In exercise of the powers conferred by section 4 of the Essential Supplies (Temporary Powers) Act, 1946 (XXIV of 1946) the Central Government is pleased to direct that the following further amendment shall be made in the Notification of the Government of India in the Ministry of Industry and Supply, No. 190 dated the 23rd June, 1948, namely:—

For the schedule annexed to the said notification, the following schedule shall be substituted, namely:—

1	2	3
Punjab Govern- ment.	(c), (d), (e), (f), (h), (i) and (j)	"In respect of distribution of coal supplies from collieries in Pakistan and from collieries in Jammu and Kashmir State, received within Punjab.
	(c), (d), (e), (f), (h), (i) and (j)	In respect of coal supplies received within the State of Punjab against the quota fixed by the Central Government from time to time.
Director, Civil Supplies and Provincial Fuel Control Officer, Punjab.	(d), (e), (f), (h), (i) and (j).	In respect of distribution of coal supplies received from the collieries in Pakistan, collieries in Jammu and Kashmir State and in respect of coal supplies received within the State of Punjab against the quota fixed by the Central Government from time to time.

1	2	3
i. All District Magistrates in the Punjab.	(e), (d), (c), (f), (h), (i) and (j).	In respect of distribution of coal supplies received within their respective jurisdiction from collieries in Pakistan, collieries in Jammu and Kashmir State and in respect of coal supplies received within their respective jurisdictions against the quota fixed by the Central Government from time to time."
ii. All District Organisers Civil Supplies and Rationing in the Punjab.		
iii. District Food and Civil Supplies Controller, Simla.		
iv. District Fuel Control Officer, Ambala.		
v. All Civil Supplies Distribution Officers in the Punjab.		
All Fuel Inspectors in the Punjab.	(i) and (j)	In respect of distribution of coal supplies received within their respective jurisdiction from collieries in Pakistan, collieries in Jammu and Kashmir State and in respect of coal supplies received within their respective jurisdictions against the quota fixed by the Central Government from time to time."

B. K. ACHARYA, Dy. Secy.

New Delhi, the 25th March 1950

No. 26/18-Tex. 2/49.—In exercise of the powers conferred by section 13 of the Central Silk Board Act (Act No. LXI of 1948) the Central Government is pleased to direct that the following amendment shall be made in the Central Silk Board Rules published with the Notification of the Government of India in the Ministry of Industry and Supply No. 26(18)-Tex-2/49, dated the 8th June 1949, namely:—

In the said Rules for Rule 15, the following shall be substituted:—

"15. At least one meeting of the Board and two meetings of the Standing Committee shall be held in each year."

B. K. KAUL, Dy. Secy.

PUBLIC NOTICE

IMPORT TRADE CONTROL

New Delhi, the 23rd March 1950

SUBJECT:—Principles governing the issue of licences for import of Machine Tools during January/June 1950.

No. 1(3)-11(25)/50.—The following decisions governing the issue of licences for the import of Machine Tools, falling under Part VI of the Import Trade Control Schedule, for the licensing period January/June 1950, are hereby published for general information.

2. All applications for import of Machine Tools falling under Part VI of the Import Trade Control Schedule should be made to the Development Officer (Tools), Directorate General of Industries and Supplies, New Delhi, accompanied by a Treasury or Bank Receipt, wherever necessary, in accordance with the instructions contained in the Notification No. 40-ITC/49, dated the 31st December 1949, issued by the Government of India in the Ministry of Commerce.

3. Licences for import of Machine Tools will be granted on the basis of essentiality and subject to non-availability of similar Machine Tools upto Grade 'I' specifications from indigenous sources. A list of Machine Tools which are being manufactured upto Grade 'I' specification in India is appended below.

4. Licences will be issued liberally to actual users for the following categories of Machine Tools from countries specified against each:—

Dollar Area

(a) Spare parts for existing Machine Tools and for specialised Machine Tools not available from soft currency areas.

Hard Currency Area

(b) Spare parts for existing Machine Tools and specialised Machine Tools not available from soft currency areas.

5. Imports of Machine Tools from countries with which Government of India have entered into Trade Agreements specifically covering Machine Tools will, however, be allowed up to the limit specified in those agreements.

APPENDIX

Machine Tools manufactured indigenously upto Grade 'I' specification.

- Bench Lathes.
- Cone Pulley type lathes up to 18" centre.
- All-g geared head lathes up to 9" centre.
- Bench and Pillar type drilling machines up to 1½".
- Shaping Machines up to 24".
- Slotting Machines up to 7".
- Planing Machines up to 6 ft. × 3 ft. × 3 ft.
- Hacksawing Machines up to 9".
- Double Ended Tool grinders up to 16".
- Power Presses up to 25 tons.
- Lathe chucks self-centring up to 9".
- Lathe chucks independent up to 18".
- 3-Jaw Drill chucks up to 1".

B. B. SAKSENA, Dy. Secy.

MINISTRY OF AGRICULTURE

New Delhi, the 23rd/27th March 1950

No. F.1-128(1)/49-Estt. (I).—The post of Assistant Compost Development Officer in the Ministry of Agriculture is redesignated as Sewage Development Officer.

L. G. MIRCHANDANI, Dy. Secy.

MINISTRY OF RAILWAYS

(Railway Board)

New Delhi, the 23rd March 1950

No. 6248-W.—It is hereby notified, for general information, that the Government Inspector of Railways, Circle No. 3, Bangalore, having inspected the Dhanora—Kinwat section of Mudkhed Adilabad Branch, Nizam's State Railway, a length of 17.99 miles on the metre gauge, certified it as fit for opening for the public carriage of passengers with effect from 10th January 1950.

The Railway Board after considering the report of the Government Inspector of Railways, have confirmed his action.

New Delhi, the 24th March 1950

No. 6265-TC.—In exercise of the powers conferred by section 35 of the Indian Railways Act, 1890 (Act IX of 1890) the Central Government is pleased to direct that the following amendment shall be made in the notification of the Government of India, Ministry of Railways No. 4858-TC, dated the 22nd November 1949, namely,

In the said notification, under the heading "The Trade, Industry and Agriculture Panel"—Persons representing

Trade, for item 18 the following item shall be substituted, namely:—

18. Shri Gujar Mal Modi, Messrs. Modi Industries, Modinagar, Meerut.

No. F(X) II-50/TX 16/2.—In pursuance of sub-section (1) of section 3 of the Railways (Local Authorities' Taxation) Act, 1941 (XXV of 1941), the Central Government is pleased to declare that the Administration of the South Indian Railway shall be liable to pay in aid of the funds of the local authority specified in column I of the Schedule annexed hereto, the taxes specified in column II thereof.

SCHEDULE

Local Authority I	Tax II
Tuticorin Municipal Council	Lighting and Education taxes

New Delhi, the 25th March 1950

No. 00200-W.—It is hereby notified for general information that the Ministry of Railways (Railway Board) have sanctioned the construction, by the Agency of the South Indian Railway Administration, of a line of railway on the Metre Gauge from Arantangi to Karaikkudi, a distance of 17.28 miles.

The line will be known as Arantangi-Karaikkudi Project.

S. S. RAMASUBBAN, Secy.

MINISTRY OF TRANSPORT

Ports

New Delhi, the 15th March, 1950

No. 19-P(13)/40.—In pursuance of rule 29 of the Cochin Harbour Craft Rules, 1947, the Central Government is pleased to prescribe the following regulations for the grant of certificates of competency or permits to Masters and Syrangs, Engineers and Engine Drivers of mechanically propelled craft plying in the Port of Cochin (not being craft coming into port from any system of inland navigation).

I. REGULATIONS FOR THE GRANT OF CERTIFICATES OF COMPETENCY TO MASTERS AND SYRANGS OF MECHANICALLY PROPELLED CRAFT PLYING IN THE PORT OF COCHIN.

1. In these regulations, unless there is anything repugnant in the subject or context—

(a) "First-class master's certificate" means a Certificate of Competency granted under these regulations to a person to be master of a steam-vessel having engines of any nominal horsepower or of a motor-vessel having engines of any brake horsepower, plying in the port of Cochin.

(b) "Second-class master's certificate" means a Certificate of Competency granted under these regulations to a person to be master of a steam-vessel having engines of less than 100 nominal horsepower, or of a motor-vessel having engines of less than 565 brake horsepower, plying in the Port of Cochin.

(c) "Syrang's certificate" means a Certificate of Competency granted under these regulations to a person to be master of a steam-vessel having engines of less than 40 nominal horsepower, or of a motor-vessel having engines of less than 226 brake horsepower, plying in the Port of Cochin.

2. CERTIFICATES OF COMPETENCY shall be granted to those persons who pass the requisite examinations and otherwise comply with the requisite conditions. For this purpose arrangements shall be made for holding examinations periodically at the Port of Madras except for examinations for the grant of certificates to persons to be syrangs of steam/motor vessels having engines of not more than 15 n.h.p./40 b.h.p. arrangements for which shall be made periodically at the port of Cochin.

3. The examination shall be held by the Principal Officer Mercantile Marine Department, Madras District, or by such officer as may be appointed by him in this behalf hereinafter called the examiner except as regards syrangs of vessels of motor/steam vessels of not more than 40 b.h.p./15 n.h.p., for which examination shall be held by the Port Officer, Cochin. They shall commence early in the forenoon, and shall be continued from day to day until all the candidates whose names appear upon the examiner's list on the day of examination are examined.

4. Candidates for examination must make their applications upon the appropriate form (Exn. 2b) which must be filled up before the examiner or such official as may be appointed by him in this behalf. The form properly filled in, together with the candidates' testimonials and discharges, must be lodged with the examiner not later than the day before the day of examination.

5. Testimonials of character and of sobriety, experience, ability and good conduct on boardship for at least the last twelve months service preceding the date of application to be examined shall be required from all applicants: Applicants who have not served on boardship within the last twelve months shall be required to produce in addition to the preceding testimonials, certificates of a like nature from their employers, or, if unemployed from some respectable house-holder. No candidate shall be allowed to be examined unless he has served on boardship at sea or on inland waters two years within the last six years, and six months within the last three years preceding the date of his application to be examined.

6. The testimonials of service of foreigners and of British seamen serving in foreign vessels, which cannot be verified by the examiner must be confirmed either by the Consul of the country to which the vessel in which the candidate served belonged, or by some other recognized official authority of that country or by the testimony of some credible person on the spot having personal knowledge of the facts required to be established. The production, however, of such proofs shall not of necessity be deemed sufficient. Each case must be decided on its own merits; and if the sufficiency of the proofs given appears to be at all doubtful the point must be referred to the Central Government.

7. Testimonials of service of candidates must ordinarily be based on their employer's office-records.

Service claimed which cannot be verified from the employer's office-records must be authenticated by affidavits of men under whom such services have been performed as well as by an affidavit of the candidate himself.

8. Should any doubt exist as to the age of a candidate, he shall be required to produce a certificate of birth or baptism, or other documentary proof of age, to the satisfaction of the examiner.

9. Foreigners must prove to the satisfaction of the examiner that they can speak and write the English language and speak Hindustani or any of the local languages sufficiently well to perform the duties required of them on board an Indian vessel.

In the case of Indians who may not be able to speak English, their certificates shall be endorsed to the effect that they are valid only for vessels manned and officered entirely by persons who can speak Hindustani or any of the local languages. This endorsement may be dispensed with if the examination is conducted wholly in English.

10. **Sight Test.**—Any persons, including the holders of Certificates of Competency granted under these rules, or persons about to apply for Certificates of Competency under these rules, if desirous of being examined in colours only, must make application to the examiner in Form Exn. 2A, and pay a fee of one rupee.

11. No candidate shall be examined in colours until he has passed the letter test.

This rule must be observed whether the candidate has or has not on any previous occasion passed the letter test.

12. Candidates who fail to pass the letter test can be re-examined at intervals of three months.

13. If a candidate fails in colours, it shall be open to him to be examined again on three occasions only at

intervals of three months. A fresh fee must be paid on each occasion.

14. A candidate who holds a Certificate of Competency granted under these rules, and, who on presenting himself for examination for a certificate of a higher grade, is unable to pass the colour test, shall notwithstanding be permitted to proceed with the examination for the certificates of the higher grade.

15. Should he pass this examination, the following statement shall be written on the face of the higher grade certificate which may be granted to him, *viz.*, "This officer has failed to pass the examination in colours".

16. Should he ultimately fail to pass the examination, a like statement, relating to his being colour-blind, shall be made by the examiner on his existing certificate before it is returned to him.

17. Holders of certificates which bear the statement of their having failed to pass in colours, and who may desire to have the statement removed from their certificates, must obtain the special permission of the Central Government.

Qualifications for Syrang's Certificates

18. All candidates for Syrang's certificates must be examined in the letter and colour tests.

19. A candidate for a Syrang's certificate must be not less than twenty-one years of age and must produce satisfactory certificates of sobriety and intelligence. He must have served four years at sea or on inland waters, the last year of which service must have been on an inland or harbour steam or motor vessel as either a helmsman or a deckhand, and shall be examined *viva voce* as to his knowledge in the following subjects:—

- (1) the rules of the road;
- (2) simple questions on the handling and management of harbour launches;
- (3) the storm-signals;
- (4) the port rules and knowledge of buoys, lights, landmarks, channels, sands, and set of tide in the Port of Cochin and its approaches.

20. If a candidate fails, he shall not be re-examined until he has rendered additional service for three months on an inland or harbour steam or motor vessel as a helmsman or as deckhand.

Qualifications for Second-class Master's Certificates

21. All candidates for Second-class master's certificate must first be examined in sight and colour.

22. A candidate for a Second-class master's certificate must be not less than twenty-two years of age, and must produce certificates of sobriety and intelligence.

He must have served at least five years at sea or on inland waters, the last three years of which service must have been as helmsman (sukhani) or deckhand of an inland or harbour steam vessel of not less than 40 nominal horsepower or a motor vessel of not less than 226 brake horsepower or an alternative service of three years as syrang in charge of a steam-launch of over 15 nominal horsepower or a motor launch of over 80 brake horsepower holding a certificate of competency granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under Ceylon Ordinance No. II of 1907 for tindals or under these regulations, and shall pass a satisfactory *viva voce* examination in the following subjects:—

- (1) the rules of the road;
- (2) the management of small steam and motor vessels under all contingencies;
- (3) storm-signals;
- (4) tide tables;
- (5) the Port Rules of the Port of Cochin;
- (6) knowledge of buoys, lights, landmarks, channels, sands and set of tides in the Port of Cochin and its approaches;
- (7) compass (The candidate should be able to read the points of the compass).

23. If a candidate fails, he shall not be re-examined till he has rendered additional service for three months as a syrang holding a syrang's certificate granted under the

Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, or as helmsman (sukhani) or deckhand of an inland or harbour steam-vessel of not less than 40 nominal horsepower or a motor-vessel of not less than 226 brake horsepower.

Qualifications for First-class Master's Certificates

24. All candidates for First-class master's certificates must first be examined in the letter and colour tests.

25. A candidate for a first-class master's certificate—

(1) must be not less than 24 years of age, and must have served as second-class master in charge of an inland steam or motor-vessel for not less than three years, or while possessing a second-class master's certificate granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these regulations, or while possessing the certificate as Mate granted under Ceylon Ordinance have served as second syrang of a steam or motor-vessel for not less than four years, or

(2) must be not less than 22 years of age and hold a certificate of competency as second mate, Foreign-going or mate Home Trade, granted under the Indian Merchant Shipping Act, 1923 (XXI of 1923), or the Merchant Shipping Act, 1894 (57 and 58 Vict. C. 60), and subsequent enactments or a certificate to which the provisions of any such Act have been made applicable under the Merchant Shipping (Colonial) Act, 1869, and have served as a mate of an inland steam or motor-vessel or master of a river flat for not less than one year, or

(3) must be not less than 24 years of age and must have served either, not less than three years at sea and three years as mate of an inland steam or motor-vessel or master of a river flat; or not less than six years as a mate of an inland steam or motor-vessel or master of a river flat.

26. Each candidate shall be examined apart, and *viva voce* in each and all of the following subjects:—

- (1) the rules of the road;
- (2) the management of any type of harbour or inland steam or motor-vessel under all contingencies, including the handling of tugs;
- (3) tide tables;
- (4) storm-signals;
- (5) a thorough knowledge of the Cochin Port Rules;
- (6) knowledge of buoys, lights, landmarks, channels, sands and set of tide in the Port of Cochin and its approaches; and
- (7) an elementary knowledge of the compass.

27. If a candidate fails, he shall not be re-examined until he has rendered additional service for three months either as second-class master in charge of an inland or harbour steam or motor-vessel as mate or second in charge of an inland or harbour steam or motor-vessel or as master of a river flat.

Failure

28. Notwithstanding anything contained in these regulations any candidate in an examination for a First or Second-class master's certificate shall be examined in the subject mentioned in clauses (5) and (6) of rule 22, or clauses (5) and (6) of rule 26, as the case may be, and if he satisfies the examiner as to his knowledge of the prescribed subject and generally as to his competency to be in charge of a steam or motor-vessel he shall be granted a certificate of competency under these rules.

29. (1) If a candidate has failed in his examination, but the subjects in which he has failed are not included in the subjects required for a certificate of a lower grade, he may, if he desires it receive a certificate of such lower grade.

(2) If a candidate fails in the subjects mentioned in clause (4) of rule 19 only, but otherwise passes a satisfactory examination, he shall be granted a Certificate of Competency under these rules.

30. When a Certificate of lower grade is granted to a candidate as provided in rule 29 no part of any fee paid by him shall be returned to him, and on presenting himself, when entitled so to do, for re-examination for the higher grade of certificate, he shall be required to pay again the full fee

Fees

31. Candidates for examination in making their application on Form Exn. 2b shall be required to pay the examination fee before any step is taken, whether by inquiring into their services or testing their qualifications or by following any other course prescribed by these rules. Should it be found that their services are not sufficient to entitle them to be examined, or should their testimonials be unsatisfactory, or should they, from any other cause, not be examined, no part of the fee shall be returned to them, but when they have fulfilled the requisite-service or are able to produce satisfactory testimonials; as the case may be, they shall be allowed to again present themselves for examination for a certificate of the same grade without paying any further fee.

32. The fee for examination must be paid to the examiner or such officer duly authorised by him in this behalf. In any case in which a candidate offers money to any other officer, the candidate so offering money shall be regarded as having committed an act of misconduct, and shall be rejected and not allowed to be again examined for twelve months.

33. If a candidate fails in his examination, no part of the fee shall be returned to him.

34. If the candidate satisfies the examiner, as to his knowledge of the prescribed subjects, and generally as to his competency to command a steam or motor vessel plying in the Port of Cochin the examiner shall grant a certificate to the candidate.

35. The fees are as follows:—

	Rs.
First-class master's certificate	16
Second-class master's certificate	6
Syrang's certificate	4

General

36. First and second-class master's certificates and syrang's certificates shall be made and issued in the forms hereto annexed.

37. Every such certificate shall be made in duplicate and every person entitled to such certificate shall supply the examiner with two copies of his photograph, passport size, one of which shall be affixed on each of the copies of the certificate. One copy of the certificate shall be delivered to the person entitled to the certificate, and the other shall be kept and recorded by the examiner.

Certificate of Competency as Syrang of a steam-vessel having engines of less than 40 nominal horsepower, or of a motor-vessel having engines of less than 226 brake horsepower, plying in the Port of Cochin.

To _____

Whereas you have been found, after examination, duly qualified to fulfil the duties of Syrang of a Steam-vessel having engines of less than 40 nominal horsepower, or of a motor-vessel having engines of less than 226 brake horsepower, plying in the Port of Cochin I do hereby grant you this CERTIFICATE OF COMPETENCY as such Syrang, to ply in the said port.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.
Port Officer, Cochin.

This _____ day of _____
No. of Certificate _____
Bearer _____, son of _____, by caste _____
Date* and place of birth, showing village, thana and district _____
Residence, showing village, thana and district _____
Height _____
Personal descriptions, stating particularly any permanent marks or scars _____
Number of Register Ticket _____
Signature _____

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at _____ on the _____ day of _____ 19 _____

REGISTERED

Principal Officer, Mercantile Marine
Department, Madras District.
Port Officer, Cochin.

*If not known exactly, must be stated on the best information or evidence available.

NOTE 1.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or any of the local languages.

N.B.—The above note should be struck out when the certificate is granted to an English-knowing candidate.

Certificate of Competency as master of a steam-vessel having engines of less than 100 nominal horsepower or of a motor-vessel having engines of less than 565 brake horse-power plying in the Port of Cochin.

To _____

Whereas you have been found, after examination, duly qualified to fulfil the duties of master of a steam-vessel having engines of less than 100 nominal horsepower, or of a motor-vessel having engines of less than 565 brake horsepower, plying in the Port of Cochin, I do hereby grant you this CERTIFICATE OF COMPETENCY as such master, to ply in the said port.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.

This _____ day of _____

No. of Certificate _____

Bearer _____, son of _____, by caste _____

Date* and place of birth, showing village, thana and district _____

Residence, showing village, thana and district _____

Height _____

Personal description, stating particularly any permanent marks or scars _____

Number of Register Ticket _____

Signature _____

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at _____ on the _____ day of _____ 19 _____

REGISTERED

Principal Officer, Mercantile Marine
Department, Madras District.

*If not known exactly, must be stated on the best information or evidence available.

NOTE 1.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or any of the local languages.

N.B.—The above note should be struck out when the certificate is granted to an English-knowing candidate.

Certificate of Competency as master of a steam-vessel having engines of any nominal horsepower or of a motor-vessel having engines of any brake horsepower, plying in the Port of Cochin.

To _____

Whereas you have been found, after examination duly qualified to fulfil the duties of master of a steam-vessel having engines of any nominal horsepower, or of a motor-vessel having engines of any brake horsepower, plying in

e Port of Cochin I do hereby grant you this certificate
Competency as such master.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.
day of 19 .

This
No. of Certificate
Address of owner
Date and place of Birth
Signature.

N.B.—Any person other than the owner thereof becom-
g possessed of this certificate is required to transmit it
ethwith to the Principal Officer, Mercantile Marine
partment, Madras District, Madras.

Issued at on the
day of 19 .
Registered.
Principal Officer, Mercantile Marine
Department, Madras District.

en. Z-B

Application to be examined for a certificate to act as
aster syrang of a steam-vessel having engines of
v nominal horsepower
s than 100 nominal horsepower or of a motor-vessel having
s than 40 nominal horsepower

engines of any brake horsepower
less than 565 brake horsepower
less than 226 brake horsepower

ying in the Port of Cochin.

Before filling in the required particulars the candidate
ould read carefully the notice and the declaration in
ivision (1).

(A) Name, etc., of Candidate

Name in full	Date and place of birth	Permanent address, stating town, or village, street and number of house and name of person (if any) with whom residing

3) Particulars of all previous certificates (if any) whether issued in the United Kingdom, the British Possessions, or elsewhere.

Number	"Competency" "Service" or "FNR"	Grade	Where issued	Date of issue	If at any time cancelled or suspended, state by what Court or authority	Date	Cause

(C) Certificate now required

Grade	Address to which it is to be sent	Date	Port for which the certificate is required	Subject in which the candidate failed

2) If the candidate has failed in a previous examination for the certificate now required, he must here state when. If he has not failed, he must state so in writing across this division.

2) Certificate of the Principal Officer, Mercantile Marine Department, Madras District.

The Declaration (I) was signed in my presence/of
id the fee of Rs. received by me.
Dated at the day of 19 .
Principal Officer, Mercantile Marine
Department, Madras District.

(F) Certificate of Examiners

Date and Place of Examination		Passed or Failed
Date	Place	

(G) Personal description of the candidate

Height		Com-plexion	Colour of		Personal mark of peculiarities, if any
Feet	Inches		Hair	Eyes	

I hereby certify that the particulars contained in Divi-
sions (F) and (G) are correct and that the candidate has
produced satisfactory testimonials and proofs of service.

Dated this day of 19 .

Principal Officer, Mercantile Marine
Department, Madras District.

(H) Complete list of testimonials and full statement of
service from beginning or from date of present certificate.

(The testimonials to be numbered consecutively accord-
ing to the number given in the first column of the state-
ment below.)

No. of testimonials, if any	Ship's name	Particulars of ship tonnage and n.d.p.	Particulars of applicant's service						Trade in which employed	Remarks	Initials of Verifier
			Capacity	Date of commencement	Date of termination	Length of service					
						Years	Months	Days			

Total service

Time served for which official proof is now produced
Time served for which no proof is produced.

(I) Declaration to be made by the Candidate

(Notice.—Any person who makes, or procures to be
made, or assists in making, any false representation for
the purpose of obtaining for himself or for any other person
a certificate of competency is liable to prosecution.)

I do hereby declare that the particulars contained in
Divisions (A), (B), (C), (D) and (H) of this form are cor-
rect and true to the best of my knowledge and belief, and
that the papers enumerated in Division (H) and sent with
this form are true and genuine documents, given and
signed by the persons whose names appear on them. I
further declare that the Statement (H) contains a true
and correct account of the whole of my services without
exception.

And I make this declaration conscientiously believing the same to be true.

Dated at the day of 19 .

Signed in the presence of the Principal Officer, Mercantile Marine Department, Madras District.

Signature of Candidate.

Present Address.

Exn. 2-A

Port of Cochin.

Rotation No.

APPLICATION TO BE EXAMINED IN SIGHT TESTS

(A) Name, etc., of Candidate

1. Christian Name at full length.
2. Surname.
3. Permanent address, stating town or village street, and No. of house and name of person (if any) with whom residing.
4. Date of birth.
5. Place of birth:—
Town or village Country and/or District.
6. If Candidate has served at sea, state:—
(i) No. of years.
(ii) Present Rating and No. and Grade of Certificate (if any).
7. If Candidate has not served at sea, state:—
(i) If about to go to sea.
(ii) In what Capacity.

(B) If Candidate has been previously examined in the Sight Tests, he must here state when and where the last examination took place, and insert "Passed", "Failed", or "Not Examined" as the case may be against each subject. If the Candidate holds a Certificate of Competency he should not be examined in Colour Vision and the entry "Not Examined" should be made in Division II.

8. Date.

9. Port.

10. Form Vision Test:—

Old

New

11. Colour Vision Test.

(C) Declaration to be made by Candidate

I hereby declare that the particulars contained in Division (A) and (B) of this form are correct and true to the best of my knowledge and belief.

And I make this declaration conscientiously believing it to be true.

dated at this day of 19 .

Signature of Candidate.

(D) Principal Officer's receipt for fee

12. Amount received. One rupee.

13. Date of receipt.

14. Place at which received.

The declaration above was signed in my presence and the fee named has been received by me.

Principal Officer, Mercantile Marine Department, Madras District.

(E) Certificate of Examiner

I hereby certify that the Candidate named above was examined by me this day in the Tests for Form and Colour Vision with the following result:—

15. From Vision Test.

Old*

New*

16. Colour Vision Test*

Examiner

Port of

This day of 19 .

To the Principal Officer, Mercantile Marine Department, Madras District.

The Examiner should fill up this form and forward it on the day of examination to

Principal Officer, Mercantile Marine Department, Madras District.

*Insert "Passed" or "Not Examined," as the case may be. In Colour Vision, if the Candidate holds a Certificate of Competency, the entry should be "Not Examined".

II. Regulations for the grant of certificates of competency to Engineers and Engine-Drivers of mechanically propelled craft plying in the Port of Cochin.

1. In these regulations, unless there is anything repugnant in the subject or context—

(a) "Engineer's certificate" means a Certificate of Competency granted under these regulations to a person to be engineer of a steam-vessel having engines of any nominal horsepower plying in the Port of Cochin.

(b) "First-class engine-driver's certificate" means a Certificate of Competency granted under these regulations to a person to be engine-driver of a steam-vessel having engines of less than 100 nominal horsepower plying in the Port of Cochin.

(c) "Second-class engine-driver's certificate" means a Certificate of Competency granted under these regulations to a person to be engine-driver of a steam-vessel having engines of less than 40 nominal horsepower plying in the Port of Cochin.

(d) "Motor Engineer's certificate" means a Certificate of Competency granted under these regulations to a person to be engineer of a motor-vessel having engines of any brake horsepower plying in the Port of Cochin.

(e) "First-class motor engine-driver's certificate" means a Certificate of Competency granted under these regulations to a person to be engine-driver of a motor-vessel having engines of less than 565 brake horsepower plying in the Port of Cochin.

(f) "Second-class motor engine-driver's certificate" means a Certificate of Competency granted under these regulations to a person to be engine-driver of a motor-vessel having engines of less than 226 brake horsepower plying in the Port of Cochin.

(g) "Principal Officer" means the Principal Officer, Mercantile Marine Department, Madras District.

2. Certificates of competency shall be granted to those persons who pass the requisite examinations and otherwise comply with the requisite conditions. For this purpose arrangements shall be made for holding examinations periodically at the Port of Madras.

3. The examinations shall be held by the Engineer and Ship Surveyor, Mercantile Marine Department, Madras hereinafter called the examiner. They shall commence early in the forenoon and shall be continued until all the candidates whose names appear on the list of the Principal Officer on the day of examination are examined.

4. Candidates for examination must make their applications in form Exn. 1 (Appendix E), which must be filled in before the Principal Officer, or such official as may be appointed by him in this behalf. The form, properly filled in, together with the candidate's testimonials, must be lodged with the Principal Officer not later than three days before the day of examination.

5. Applicants shall be required to produce, in addition to the usual forms of discharge or service record satisfactory testimonials as to sobriety, experience, ability, and general good conduct for at least the last 12 months' service on board a ship preceding the date of application to be examined unless the Central Government, after having investigated the matter, shall see fit to reduce the time.

An applicant already possessed of a certificate granted under these rules and wishing to appear for one of a higher grade must produce his certificate and all the discharges or service records and testimonials he submitted when he applied for examination in the lower grade as well as the discharges or service records and testimonials necessary for the higher grade certificate. Should references

doubtful authenticity be submitted by candidates for examination, the Principal Officer may require proof from the candidate of their genuineness, or an affidavit made to that effect.

If applicants have served on shore immediately preceding their application, certificates of sobriety must be produced from their employers, or from a respectable householder if unemployed. No candidate shall be allowed to be examined unless he has served on boardship six months within the last three years preceding the date of his application to be examined.

6. As such testimonials and discharges may have to be verified before the candidates can be examined, it is desirable that these should be handed over, together with the form Exn. 1 as early as possible.

7. The testimonials of service of foreigners and of British seamen serving in foreign vessels, which cannot be verified in the office of the Principal Officer, must be confirmed either by the Consul of the country to which the vessel in which the candidate served belonged, or by some other recognised official authority of that country or by the testimony of some credible person on the spot, having personal knowledge of the facts required to be established. The production, however, of such proofs shall not of necessity be deemed sufficient. Each case must be decided on its own merits; and if the sufficiency of the proofs given appears to be at all doubtful the point must be referred to the Central Government.

8. Should any doubt exist as to the age of a candidate he shall be required to produce a certificate of birth or baptism or other documentary proof of age, to the satisfaction of the Principal Officer.

9. Foreigners must prove to the satisfaction of the examiner that they can speak and write the English language, and speak Hindustani or Tamil sufficiently well to perform the duties required for them on board a British Indian vessel. In the case of Indians who may not be able to speak English, their certificates shall be endorsed to the effect that they are valid only for vessels manned and officered entirely by or persons who can speak Hindustani, Tamil or Malayalam. This endorsement may be dispensed with if the examination is conducted wholly in English.

10. Testimonials of service of candidates must ordinarily be based on their employers' office-records.

Services claimed which cannot be verified from the employers' office-records must be authenticated by affidavits of men under whom such services have been performed as well as by an affidavit of the candidate himself.

Testimonials of service from Certificates Marine Engineers or Mechanical Engineers with comparable qualifications shall be accepted.

11. Candidates shall be required to account for any gaps in their services with documentary evidence.

Qualifications for Second-class engine-drivers' Certificates.

12. A candidate for a Second-class engine-driver's certificate must have attained the age of twenty-one years and must possess one of the following qualifications, namely:—

(a) He must have served an apprenticeship of at least three years in the making or repairing of steam-engines, and one year in the engine-room of a steamer; or

(b) He must have served four years in the engine-room of a steamer at sea, or on inland waters under an engineer or first-class engine-driver possessing certificates of competency granted under the Inland Steam-vessels Act, 1917 (I of 1917) one year of which service must have been as a syrang tindal or fire-man in charge of a watch in a vessel having engines of not less than twenty nominal horsepower; or

(c) He must have served five years in the engine-room of a steamer, one year of which service must have been as a syrang, tindal, principal fireman or fireman in charge of a watch in a vessel of not less than 15 nominal horsepower under a first-class engine-driver certificated under the Inland Steam-vessels Act, 1917 (I of 1917); or

(d) He must have served two years in charge of the engine of a factory or mill under an appropriately qualified

manager or engineer, and one year as engine-room syrang, tindal or principal fireman in a steamer of not less than 15 nominal horsepower.

Note—For the purpose of rules 12(a), 15(a), 24(a), 29(a), and 31(a), any period six months or more spent at an approved technical school, will count as 2/3 of the same period of workshop service provided the candidate produces a certificate of regular attendance and satisfactory progress from the Principal of the school.

For a list of approved technical schools see Appendix F.

13. He must satisfactorily pass a *viva voce* examination as to the making of marine engines and boilers and the uses of the different parts and fittings, also as to the use of brine cocks, the salinometer and blowing-off, the care of boilers in salt or foul water, and the art of economical stoking and prevention of smoke.

14. He must be able, if required, to show his practical qualifications by actually working the engines of a small steamer, after fulfilling all the other tests to which he will be subjected.

Qualifications for Second-class motor engine-drivers' Certificates

15. A candidate for a Second-class motor engine-driver's certificate must have attained the age of twenty-one years and must possess one of the following qualifications, namely:—

(a) He must have served for not less than three years as an apprentice or journeyman in the making, fitting and/or repairing of internal combustion or marine steam-engines and in addition he must have served for six months in the engine-room of a motor-vessel having engines of not less than 85 brake horsepower or nine months in a vessel with engines of not less than 40 brake horsepower; or

(b) He must have served for a period of not less than four years in the engine-room of a motor-vessel of not less than 226 brake horsepower, of which period not less than one year must have been served as a syrang, principal tindal or chief greaser;

Provided that of the four years mentioned above one-third may be served in the engine-room of a steam vessel of not less than 40 nominal horsepower, or

(c) He must have served for a period of not less than five years in the engine-room of a motor-vessel having engines of not less than 85 brake horsepower, or six years in the engine-room of a vessel having engines of not less than 40 brake horsepower as syrang, tindal or chief greaser;

Provided that of the five and six years' service mentioned above, one-third may be served in the engine-room of a steam-vessel of not less than 10 nominal horsepower, or

(d) He must have served for a period of not less than two years in charge of the engines of a factory or mill under a certificated engineer, as well as for a period of not less than one year in the engine-room of a motor-vessel of not less than 85 brake horsepower, or eighteen months in a motor-vessel having engines of not less than 40 brake horsepower, as a syrang, tindal or chief greaser; or

(e) He must have served for at least six months with a Second-class engine-driver's certificate for steam-vessels granted under the Inland Steam-Vessels Act, 1917 (I of 1917), or under these regulations, or with a certificate of a higher grade in the engine-room of a motor-vessel having engines of not less than 85 brake horsepower or for nine months in a motor-vessel having engines of not less than 40 brake horsepower.

(f) He must have served for at least two years, whilst in possession of a permit granted under the Inland Steam vessels Act (I of 1917), or Cochin Harbour Craft Rules, 1947 as an engine-driver of a motor-vessel having engines of 40 brake horsepower or under followed by three years' service in the engine-room of a motor-vessel having engines of more than 40 brake horsepower as syrang, tindal or chief greaser;

Provided that when the candidate produces proof of long service with such a permit in launches having engines of 40 brake horsepower or under, remission of service with engines of over 40 brake horsepower may be allowed in the ratio of one year lower-powered launches in lieu of six

months' service in higher-powered launches with a maximum remission of eighteen months. The service to count for remission must be in excess of the two years required in launches of 40 brake horsepower or under.

16. The candidate must satisfactorily pass a *viva voce* examination on the working of the various types of internal combustion engines and be able to name the principal parts of the machinery.

17. The candidate must know what attention is required by the various parts of the machinery, understand the use and management of the different valves, cocks, pipes and connections; and be familiar with the various methods of supplying air and fuel to the cylinders.

18. The candidate must be able to describe the chief causes which may make the engine difficult to start and to explain how he would proceed to remedy any defects connected therewith; he must also be able to show that he understands the mechanism of the starting and reversing arrangements and that he is competent to deal with defects therein.

19. The candidate must be able to overhaul the engine, to adjust the working parts and to put the engine together again in good working condition. He must also understand how to make good the result of ordinary wear and tear to the machinery and how to correct defects from accidents.

20. The candidate must be familiar with the nature and properties of the various fuel oils used in internal combustion engines. He must understand what is meant by "flash-point".

21. The candidate must know the danger resulting from leakage from the fuel oil tanks and must understand the precautions to be taken against explosion. He must also be able to take the necessary precautions to guard against the escape of inflammable vapour from the vaporiser when the engines are stopped. He must also know how to deal with fire should it break out.

22. The candidate must also be able, if required, to know his practical knowledge by actually working the engines of a motor-vessel in the presence of the examiner.

23. The candidate must possess a working knowledge of the auxiliary steam-boilers and machinery connected therewith, namely, electric light engines, steering engines, evaporators and pumps.

Qualifications for First-Class engine-driver's Certificates

24. A candidate for a first-class engine-driver's certificate must have attained the age of twenty-two years and must possess one of the following qualifications, namely:—

(a) He must have served an apprenticeship of at least three years in the making or repairing of steam-engines and one year as Assistant Engineer in a steamer having engines of not less than 80 nominal horsepower whilst holding a second-class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules; or

(b) He must have served five years in the engine-room of a steamer at sea or on inland waters, two years of which service must have been as syrang principal tindal or fireman in charge of a watch in a steamer having compound surface, condensing engines of not less than 30 nominal horsepower whilst holding a second-class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules; or

(c) He must have served one year as second driver with a second class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917) or under these rules in charge of a watch on the main engines and boilers of a steamer having compound surface condensing engines of not less than 30 nominal horsepower; or

(d) He must have served one year with a second class Engine driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917) or under these regulations, as driver in charge of the engines of a steamer having compound surface condensing engines of not less 20 nominal horsepower,

(e) He must have served eighteen months as syrang or principal tindal with a second-class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these regulations, in charge of a watch on the main engines and boilers of a steamer having compound surface condensing engines of not less than 30 nominal horsepower; or

(f) He must have served three years in charge of the engines of a factory or mill under an appropriately qualified Manager or engineer, as well as two years as assistant engineer, engine-room syrang or principal tindal of a steamer having engines of not less than 80 nominal horsepower whilst holding a second class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules.

25. He must pass a *viva voce* examination similar to that required by rule 13 for a second-class engine driver's certificate but more advanced.

26. He must also be able, if required, to show his practical qualifications by actually working the engines of a steamer after fulfilling all the other tests to which he will be subjected.

Qualifications for First-class motor engine-driver's Certificates

27. A candidate for first class motor engine-driver's certificate must have attained the age of twenty-two years and must possess one of the following qualifications, namely:—

(a) He must have served for not less than one year as engine-driver on regular watch on the main engines of a motor vessel of not less than 565 brake horsepower whilst holding a second-class engine-driver's certificate for motor vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917) or under those rules; or

(b) He must have served for a period of not less than 18 months as second driver with a second-class engine-driver's certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, in charge of a watch on the main engines of a motor-vessels of not less than 226 brake horsepower; or

(c) He must have served for a period of not less than 4 years in the engine room of a motor vessel of not less than 226 brake horsepower, of which period not less than one year must have been served as a Chief greaser, syrang or principal tindal whilst holding a second-class engine-driver's certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917) or under these rules. If the motor-vessel is of not less than 170 brake horsepower he must have served for a period of not less than five years in such vessel of which period not less than two years must have been served as a syrang, principal oilman or chief greaser whilst holding a second-class engine drivers' Certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules; or

(d) He must have served for a period of not less than 18 months with a second-class engine-driver's certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, as driver in charge of the engine of a motor-vessel of not less than 113 brake horsepower; or

(e) He must have served for not less than two years as a syrang, principal tindal or chief greaser with a second-class engine-driver's certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, in a motor-vessel of not less than 226 brake horsepower; or

(f) He must have served for not less than three years in charge of the engines of a factory or mill under a certificated engineer as well as for not less than one year in the engine-room of a motor-vessel of not less than 226 brake horsepower as Assistant Engineer, syrang, principal tindal or chief greaser whilst holding a second-class engine-driver's certificate for motor-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules; or

(g) He must have served for not less than two years as engine driver on regular watch on the main engines of a motor-vessel of not less than 226 brake horsepower whilst holding a first-class engine-driver's certificate for steam-vessels granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules; or

(h) He must have served for not less than four years as engine-driver on regular watch on the main engines of a motor-vessel of not less than 226 brake horsepower whilst holding a second-class engine-driver's certificate granted under the Inland Steam-Vessels Act, 1917 (I of 1917) or under these rules; or

(i) He must hold an engine-driver's certificate for sea-going steamships granted under the Indian Merchant Shipping Act, 1923 (I of 1923), and must have served on regular watch on the main engines of a motor-vessel of not less than 226 brake horsepower for period not less than one year.

28. He must pass a *viva voce* examination similar to that required under rules 16 to 23 for a second-class engine-driver's certificate but of a more advanced character.

Qualifications for Engineer's Certificates

29. A candidate for an Engineer's certificate must be not less than twenty-two years of age and must possess the following qualifications, namely:—

(a) He must have served as an apprentice engineer for four years and prove that during the period of his apprenticeship he has been employed on the making or repairing of steam-engines, boilers, etc.

Journeyman's time shall be considered equivalent to apprenticeship.

In addition to the apprenticeship described above, the applicant must have served two years thereafter as Assistant Engineer in a steamer having engines of not less than 80 nominal horsepower or with a first-class engine-driver's certificate granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these regulations, as driver-in-charge of the engines of a steamer having compound surface condensing engines of not less than 30 nominal horsepower, or

Failing the above service, he must have served four years with a first-class engine-driver's certificate granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, in charge of the engines of a steamer having compound surface condensing engines of not less than 30 nominal horsepower.

(b) He must be able to give a satisfactory description of boilers and the methods of staying them together with the use and management of the different valves, cocks, pipes and connections.

(c) He must understand how to correct defects from accident, decay, etc., and the means of repairing such defects.

(d) He must understand the use of the water-gauge, pressure-gauge, barometer, thermometer and salinometer, and the principles on which they are constructed.

(e) He must state the causes, effects and usual remedies for incrustation and corrosion.

(f) He must be able to explain the method of testing and altering the setting of the slide valves, and method of testing the fairness of shafts and adjusting them.

(g) He must be able to calculate the suitable working pressure for a steam-boiler of given dimensions and the stress, per square inch, on crank and tunnel shafts when the necessary data are furnished.

(h) He must understand the construction of, and be able to maintain in working condition, the auxiliary machinery which may be placed under his charge, *viz.*, electric light engines (steam and oil) and dynamos, electric motors, the various types of steering engines, hydraulic and refrigerating machinery.

(i) He must understand the construction of centrifugal bucket, and plunger pumps, and the principle on which they act.

(j) He must be able to state how a temporary or permanent repair could be effected in case of derangement of a part of the machinery, or total breakdown.

(k) He must write a legible hand, and have a good knowledge of arithmetic up to and including vulgar and decimal fractions and square and cube roots. He must also understand the application of these rules to questions about safety valves, coal consumption, consumption of stores, capacities of tanks, bunkers, etc.

(l) He must be able to pass a creditable examination as to the various constructions of crew engines in general use, as to the details of the different working parts, external and internal, and the use of each part.

(m) He must possess a creditable knowledge of the prominent facts relating to combustion, heat, steam and electricity.

(n) He shall be required to make an intelligible hand sketch, or a working drawing of some one or more of the principal parts of a steam-engine, and to mark in, without a copy, all the necessary dimensions in figures, so that the sketch or drawing could be worked from (Appendix D). Drawing Boards and T-squares shall be provided, but applicants shall have to bring with them any drawing instruments they may require.

(o) He must be able to state the general proportions borne by the principal parts of the machinery to each other, and to calculate the direct stress, the torsional stress, and the bending stress in round bars and the direct stress and the bending stress in rectangular bars with given loads.

(p) He must be able to describe different types of marine motor-engines, their working and uses of the several parts.

Qualifications for Motor-engineer's Certificates

30. A candidate for a motor-engineer's certificate must have attained the age of 22 years.

31. He must possess the following qualifications, namely:—

(a) He must have served for not less than four years as an apprentice engineer or journeyman at the making, fitting and repairing of steam or motor engines such as would be recognised as affording useful training for a marine engineer: No time served before the age of 15 shall be accepted. Not less than three years of this period must have been spent at fitting, erecting or repairing internal combustion engines. The remaining year may have been spent either wholly or in part on work of this nature, or at an approved technical school as mentioned in the rules for examination of seagoing engineers.

Service as journeyman shall be considered as equivalent to apprenticeship, but no time served before the age of 15 is reached shall be accepted.

Workshop service other than the above may be accepted if it is considered useful training for a motor-engineer, but all such cases must be submitted to the Principal Officer for consideration before the candidate is examined, and at least an additional three months of qualifying service on marine internal combustion engines either in the works or on regular watch in main engine-room of vessels propelled by these engines must have been performed in respect of each twelve months of workshop service of this nature, or other than on the making or repairing of internal combustion engines so accepted. If the service is not altogether satisfactory, a longer additional period than that specified may be required.

Any deficiency in the requisite four years' workshop service may be made up by service afloat on regular watch in the main engine-room of a vessel of not less than 565 brake horsepower propelled by internal combustion engines.

If the vessel is a sea-going vessel one and half times the period of deficiency must be served and if an inland vessel, two and a quarter times the period of deficiency shall be required. Thus a candidate who has no workshop service must serve six years in a suitable sea-going vessel, or nine years in an inland-vessel in lieu of his apprenticeship.

(b) In addition to the workshop service as above described or the alternative service afloat, the candidate must have

spent 18 months at sea as an engineer on regular watch on the main engines of a sea-going ship propelled by internal combustion engines of not less than 565 brake horsepower or 27 months in a similar inland-vessel.

32. He must write a legible hand and have a good knowledge of arithmetic up to and including vulgar and decimal fractions and square root. He must also be able to work out questions relating to spring or lever-loaded safety and relief valves, consumption of oil and stores, capacities of tanks, bunkers, etc., speed of vessels, and other similar problems, and be able to calculate suitable working pressures for air receivers of given dimensions and the stress per square inch on crank tunnel shafts and other parts of the machinery when the necessary data are furnished.

33. He must be able to give a clear explanation of the principles on which oil, gas or other internal combustion engines work, including the methods of ignition, to point out the differences between them, and to show by means of illustrative sketches and otherwise that he understands the details of the construction of those in general use.

34. He must be familiar with the various methods of supplying air and fuel to the cylinders in the different types of engines, the construction of the apparatus for carburetting, atomising, or gasifying the fuel, and the means for cooling the cylinders, pistons, etc.

35. He must have a satisfactory knowledge of the process employed in the construction of internal combustion engines in the workshop and of the methods used in fitting the machinery on boardship.

36. He must know what attention is required by the various parts of the machinery, and understand the use and management of the different valves, cocks, pipes and connections.

37. He must be able to state and describe the chief causes which may make the engines difficult to start and to explain how he would proceed to remedy any defects arising therefrom. He must also be able to show that he understands the mechanism of the starting and reversing arrangements, and is competent to deal with defects therein.

38. He must understand how to make good the results of ordinary wear and tear to the machinery, how to test the fairness of shafting, etc., how to correct defects from accident, delay, etc., and how a temporary or permanent repair could be effected in case of derangements or total breakdown.

39. He must understand the construction of the pressure gauge, barometer, thermometer, and other instruments used in the engine-room and the principles on which they work.

40. He must understand the construction and working of centrifugal bucket, and plunger pumps, and the principles on which they act.

41. He must understand the construction and working of air compressors, gas producers, steering engines, electric light engines and dynamos, electric motors, refrigerating, hydraulic and other auxiliary machinery found on boardship.

42. He must possess a good working knowledge of the construction and management of auxiliary steam boilers and machinery and be familiar with the prominent facts relating to combustion, heat and steam.

43. He must be familiar with the nature and properties of the various oils, etc., generally used in internal combustion engines, must understand what is meant by flash point; and have a knowledge of the explosive properties of gas on the vapour given off by these oils, etc., when mixed with definite quantities of air, and be thoroughly conversant with the danger of exposing such gas or vapour to a naked light; or of allowing any leakage from the oil tanks particularly into the vessels' bilges, and unventilated spaces or from gas producers, pipes, vapourizers, etc.

44. He must thoroughly understand the precautions to be taken against fire or explosion from oil or gas and know how to deal with fire should it break out. He should also be familiar with the action of wire gauge diaphragms when placed in pipes and connections to oil tanks, etc., for the

purpose of preventing the explosion or ignition of oil vapour therein.

45. He must be able to explain the principal construction and arrangement of primary and secondary batteries and induction coils so far as is necessary for the efficient management of an oil engine.

46. He must be able to take off and calculate indicator diagrams and understand the action of the gas in the cylinder as shown thereby.

47. He must be able to make a dimensioned working sketch drawing of some simple part of the machinery.

48. An engineer in possession of a (steam) certificate of competency as a first or second-class engine-driver granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules, is also eligible for a motor engineer's certificate under the following rules:—

(a) He must have served for not less than six months as an Assistant Engineer on regular watch on the main engines of a sea-going ship propelled by internal combustion engines of not less than 565 brake horsepower or nine months in a similar inland-vessel whilst holding a first-class certificate of competency for sea-going steamships granted or recognised as valid under the Merchant Shipping Act, 1894 (57 and 58 Vict., c. 60). He must also satisfy the examiner that he is fully conversant with internal combustion engines and be able to show both in writing and in *viva voce* examination that he has satisfactory knowledge of the subjects covered by rules 33 to 38 and 43 to 46 of these rules; or

(b) He must have served for not less than 12 months as an Assistant Engineer on regular watch on the main engines of a sea-going ship propelled by internal combustion engines of not less than 565 brake horsepower or 18 months in a similar inland vessel whilst holding a second-class certificate of competency for sea-going ships, granted or recognised as valid under the Merchant Shipping Act, 1894 (57 and 58 Vict., c. 60). He must also satisfy the examiner that he is fully conversant with internal combustion engines and be able to show both in writing and in *viva voce* examination that he has satisfactory knowledge of the subjects covered by rules 33 to 38 and 43 to 46 of these regulations.

49. Engineers in possession of ordinary certificates of competency as engineers granted under the Inland Steam-vessels Act, 1917 (I of 1917) or under these regulations, may be examined for the grant of a motor-engineer's certificate.

Provided that they have served for not less than 12 months as Assistant Engineer on regular watch on the main engines of sea-going ship propelled by internal combustion engines of not less than 565 brake horsepower or 18 months on a similar inland-vessel whilst holding an engineer's certificate granted under the Inland Steam-vessels Act, 1917 (I of 1917), or under these rules.

GENERAL REGULATIONS AS TO EXAMINATIONS Engineers

50. All books necessary for the use of candidates under examination shall be provided, and applicants shall not be permitted to take into the examination room any book, paper, document, or memoranda of any description whatever; and subject to the provisions referred to hereafter, they shall also not be allowed to work out their problems on a slate or on waste paper.

51. Candidates shall be allowed in the time allotted to cancel any part of their work, and when required, additional papers shall be supplied by the examiner. These additional sheets must be attached to and form part of the examination papers.

52. In the event of any candidate being discovered copying from another, or affording any assistance or giving any information to another, or communicating in any way with another during the time of examination, he shall be regarded as having failed in his examination, and shall be turned back for three months in the same manner as if he had failed in the practical part of the examination; and no part of the fees he may have paid for examination shall be returned to him.

53. If a candidate leaves the room before answering any question which has been given to him, he cannot afterwards be permitted to answer it, but the examiner may substitute other data or another question.

54. (a) The examination of candidates for motor engineer's certificates consists of four parts; Arithmetic, Drawing, Elementary questions and *viva voce*. When the number of marks obtained in Arithmetic amounts to 28, that is two-thirds of the maximum, the candidate passes in Arithmetic.

(b) All applicants presenting themselves for examination for motor-engineer's certificates shall be required to give written answers to ten questions shown in Appendix B. These questions are intended to furnish a record to some extent of the candidate's knowledge at the time of his examination, and also to induce the candidates to pay more attention to their handwriting and spelling.

55. The form, Appendix A, on which these answers shall be written, contains also some question as to the experience of the applicant, to be answered by him in writing.

56. The examiner may add to the *viva voce* questions on the practical management of steam-engines and boilers any of those contained in Appendix B.

57. If at the expiration of the time allowed the candidate has worked out correctly the whole of the question set to him, and given satisfactory answers in the *viva voce* examination, he shall be declared to have passed.

58. If at the expiration of the time allowed he has not worked out the whole of the questions set to him, but if the result of the *viva voce* examination taken in conjunction with the answers to such of the questions as he has worked out, is sufficient to satisfy the examiner that the applicant is competent to take charge of engines, he shall be declared to have passed.

59. In other cases he shall be declared to have failed.

60. A report of the examination, and the examination papers shall be forwarded by the examiner to the Principal Officer on the prescribed form.

61. If the candidate passes, he shall receive a formal note to that effect upon which the Principal Officer shall issue the certificate to the candidate, whose testimonials, etc., shall be returned at the same time.

Fees

62. Candidates for examination, in making their application on form Exn. 1 (Appendix E) shall be required to pay the examination fees before any step is taken, whether by inquiring into their services or testing their qualifications, etc. No part of the fee shall under any circumstances be returned to them; but should it be found that their service is not sufficient to entitle them to be examined, or that their testimonials are unsatisfactory, they shall be allowed to present themselves for examination without paying any further fee when they have fulfilled the requisite service or are able to produce satisfactory testimonials, as the case may be.

63. The fee for examination must be paid to the Principal Officer or such officer duly authorised by him in this behalf. In any case in which a candidate offers money to any other officer, the candidate so offering money shall be regarded as having committed an act of misconduct, and shall be rejected and not allowed to be examined for 12 months.

64. If a candidate fails in his examinations, no part of the fee he has paid shall be returned to him.

65. The fees are as follows:—

	Rs.
Second-class engine-driver's or second-class motor engine-driver's certificate.	4
First-class engine-driver's or first-class motor engine-driver's certificate.	10
Engineer's or Motor Engineer's certificate . . .	12

Failure

66. If the applicant fails in the *viva voce* or practical part of the examination, he may not present himself for re-examination until he can produce proofs of three months' further service afloat. If he fails in Arithmetic or Drawing only, he may come up again at any time.

Engine-drivers may be examined *de novo* after six months' active service as syrang or principal tindal or second driver if the past examination showed that they might reasonably be expected to qualify.

General

67. Engineer's and Motor Engineers certificates, first and second-class engine-driver's certificates and first and second-class motor engine-driver's certificates, shall be made out and issued in the form hereto annexed.

68. Every such certificate shall be made in duplicate, and every person entitled to such certificate shall supply the Principal Officer with two copies of his photograph of passport size one of which shall be affixed on each of the copies of the certificate. One copy of the certificate shall be delivered to the person entitled to the certificate and the other shall be kept and recorded by the Principal Officer.

Certificate of Competency as Engine-driver of a steam-vessel having engines of less than 40 n. h. p. plying in the Port of Cochin

To

Whereas you have been found after examination, duly qualified to fulfil the duties of Engine-driver of a steam-vessel having engines of less than 40 n. h. p. plying in the Port of Cochin I do hereby grant you this Certificate of Competency as such Engine-driver.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.

This day of 19 .
No. of Certificate
Bearer , son of , by caste
Date* and place of birth, showing village, thana and district.

Residence, showing village, thana and district
Height
Personal description, stating particularly any permanent marks or scars
Number of Register Ticket
Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
Department, Madras District.

Note.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or Tamil or Malayalam.

N.B.—The above note should be struck out when the Certificate is granted to an English-knowing candidate.

* If not known exactly, must be stated on the best information or evidence available.

Certificate of Competency as Engine-driver of a steam-vessel having engines of less than 100 n. h. p. plying in the Port of Cochin

To

Whereas you have been found duly qualified to fulfil the duties of Engine-driver of a steam-vessel having engines of less than 100 n. h. p. plying in the Port of Cochin I do hereby grant you this Certificate of Competency as such Engine-driver.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.

This day of 19 .
 No. of Certificate
 Bearer , son of , by caste
 Date* and place of birth, showing village, thana and district
 Residence, showing village, thana and district
 Height
 Personal description, stating particularly any permanent marks or scars
 Number of Register Ticket
 Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate of competency is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
 Department, Madras District.

Note.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or Tamil or Malayalam.

N.B.—The above note should be struck out when the Certificate is granted to an English-knowing candidate.

* If not known exactly, must be stated on the best information or evidence available.

Certificate of Competency as Engineer of a steam-vessel having engines of any nominal horsepower plying in the Port of Cochin.

To _____

Whereas you have been found duly qualified to fulfil the duties of Engineer of a steam-vessel having engines of any nominal horsepower lying in the Port of Cochin I do hereby grant you this Certificate of Competency as such Engineer.

Given under my hand and seal.

Principal Officer, Mercantile Marine
 Department, Madras District.

This day of 19 .
 No. of Certificate
 Bearer.
 Date and place of birth
 Height
 Personal description, stating particularly any permanent marks or scars
 Number of Register Ticket
 Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
 Department, Madras District.

Certificate of Competency as Engine-driver of a motor-vessel having engines of less than 226 b. h. p. plying in the Port of Cochin.

To _____

Whereas you have been found, after examination, duly qualified to fulfil the duties of Engine-driver of a motor vessel having engines of less than 226 b. h. p. plying in the Port of Cochin, I do hereby grant you this Certificate of Competency as such Engine-driver.

Given under my hand and seal.

Principal Officer, Mercantile Marine
 Department, Madras District.

This day of 19 .
 No. of Certificate
 Bearer , son of , by caste
 Date* and place of birth, showing village, thana and district
 Residence, showing village, thana and district
 Personal description, stating particularly any permanent marks or scars
 Height
 Number of Register Ticket
 Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
 Department, Madras District.

Note.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or Tamil or Malayalam.

N.B.—The above note should be struck out when the Certificate is granted to an English-knowing candidate.

* If not known exactly, must be stated on the best information or evidence available.

Certificate of Competency as Engine-driver of a motor-vessel having engines of less than 565 b. h. p. plying in the Port of Cochin.

To _____

Whereas you have been found, after examination, duly qualified to fulfil the duties of Engine driver of a motor-vessel having engines of less than 565 b. h. p. plying in the Port of Cochin, I do hereby grant you this Certificate of Competency as such Engine-driver.

Given under my hand and seal.

Principal Officer, Mercantile Marine
 Department, Madras District.

This day of 19 .
 No. of Certificate
 Bearer . son of . by caste
 Date* and place of birth, showing village, thana and district
 Residence, showing village, thana and district
 Personal description, stating particularly any permanent marks or scars
 Height
 Number of Register Ticket
 Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
 Department, Madras District.

Note.—This certificate is valid only for steam-vessels manned and officered entirely by persons who can speak Hindustani or Tamil or Malayalam.

N.B.—The above note should be struck out when the Certificate is granted to an English-knowing candidate.

* If not known exactly, must be stated on the best information or evidence available.

Certificate of Competency as Engineer of a motor-vessel having engines of any brake horsepower plying in the Port of Cochin.

To _____

Whereas you have been found duly qualified to fulfil the duties of Engineer of a motor-vessel having engines of any

brake horsepower plying in the Port of Cochin, I do hereby grant you this Certificate of Competency.

Given under my hand and seal.

Principal Officer, Mercantile Marine
Department, Madras District.

This day of 19 .

No. of Certificate

Bearer

Date and place of birth

Height

Personal description, stating particularly any permanent marks or scars

Number of Register Ticket

Signature

N.B.—Any person other than the owner thereof becoming possessed of this certificate is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at , on the day of 19 .

REGISTERED

Principal Officer, Mercantile Marine
Department, Madras District.

APPENDIX A

(See rule 55)

To the Examiner

The Examiner shall require all candidates to fill up the particulars noted below and shall forward the same to the Principal Officer, Mercantile Marine Department, Madras District, along with the report of the examination.

Failure in the elementary question shall be treated as failure in arithmetic.

The numbers of the questions for each examination shall be selected by the examiner, and they are not to be communicated to the candidate until his examination commences.

Port	Class for which examined
Date	Candidate's name

A. Where and how long did you serve in works at the making or at the repairing of engines, and in what capacities?

B. How long have you served in the engine-room at sea or on inland waters, or in the Port of Cochin and in what capacities?

C. With what descriptions of engines have you served at sea, or in inland waters, or in the Port of Cochin paddle, or screw, or both? What size were the engines?

D. With what description of boilers have you served at sea, or on inland waters, or in the Port of Cochin, cylindrical, multitubular, water tube, sectional or flue boilers?

E. What engine defects have come under your notice at sea, or on inland waters, or in the Port of Cochin, cylindrical, multitubular, water tube sectional remedied? Give the names of the steamers for verification.

F. What boiler defects have come under your notice what caused these defects, and how were they remedied? Give names of the steamers for verification.

For the questions to be answered on the following pages, see the list of Elementary Questions in Appendix B. The questions need not be written: only the answers to them.

Question No.

Question No.

Question No.

Question No.

Question No.

Question No.

Question No.

Question No.

Question No.

Question No.

APPENDIX B.

(See rule 54.)

ELEMENTARY QUESTIONS

For the examination of Engineers for Certificates of Competency.

1. What parts of an engine are generally made of wrought iron?

2. What parts of an engine are generally made of cast iron?

3. For what parts of an engine is steel sometimes used?

4. What parts of an engine are generally made of brass or gunmetal?

5. Where is "white metal" sometimes used? On account of what property possessed by it is it adopted? What objection is there to its more general use?

6. For what parts is Muntz metal sometimes used? Is it malleable? For what properties is it valued?

7. What difference is there in the composition of cast iron, of wrought iron and of steel?

8. How can cast iron, wrought iron, and steel be distinguished from each other?

9. What are the different properties of cast iron, of wrought iron, and of steel?

10. What is meant by the terms "breaking stress," "proof stress," "safe working stress"?

11. What is the cohesive strength, or breaking stress, of good ordinary wrought iron?

12. Tempering steel; how is it done, and in what order do the colours come?

13. What is case-hardening?

14. Which of the common metals or alloys can be forged and which of them are brittle or "short"?

15. What is meant by "welding"? Which of the common metals can be welded?

16. The expansion of metals by heat; give examples of this in the engine and in the boiler.

17. In the construction of steel cylindrical marine boilers for what parts have the plates to be worked hot? What precautionary treatment of these plates is afterwards necessary?

18. In what parts of cylindrical marine boilers is the strongest rivetting employed? In which of the shell seems is it most necessary?

19. What is "caulking," and how are seams prepared for caulking?

20. Describe the different ways of fastening the ends of the main stays of a boiler. What are the merits of, or objections to, the different plans?

21. What stress per square inch is allowed on boiler stays?

22. Describe a rivetted stay, and state where such stays are commonly used.

23. Where are thin plates to be looked for in a boiler as it wears, and how is the thinness to be detected?

24. How are boiler tubes fixed? What are "stay tubes," and how are they secured?

25. Where is it generally that boiler tubes leak? How is this defect repaired? What are the causes of this leaking?

26. What are the causes of cracked tube plates? Where are the cracks situated? How are they repaired?

27. What is the difference between a "dry uptake" and a "wet uptake"? Which requires more repair? Why? Where have you seen a wet uptake?

28. What is a superheater? What is its construction? What valves are on it? There is sometimes a gauge glass on it. What is that for? Are superheaters now in general use?

29. What parts of marine multitubular boiler are first injured by shortness of water?

30. Where are angle irons sometimes used in the construction of a boiler, and where are flanged plates used?

31. Priming; to what causes is it attributed? What means are applied to prevent it? What evils may be produced by it?

32. Funnel draught; what makes it? What checks it?

33. Flame is sometimes seen at the top of the funnel; what causes this appearance? Is it beneficial or is it detrimental? Why so?

34. A blast pipe; what is its construction? Where is it placed? For what is it used?

35. How many bottom blow-off cocks are generally fitted to each boiler, and why are they so fitted?

36. Blow-off cocks are sometimes fitted with a spanner guard; for what purpose is this? Describe how the guard is formed.

37. Water-gauge test-cocks; where are they placed? At what heights? Must the cocks themselves be at those heights? What provision is made for cleaning these cocks should they ever become choked? When there are no test-cocks, how is the height of the water ascertained?

38. What is a dead-weight safety valve? Of what are the rubbing surfaces formed? How is a lock-up valve arranged to admit of lifting it or of turning it round, and to prevent adding to the weight?

39. About what area of safety valve is now required by the Board of Trade? What is the effect of suddenly opening a safety valve when steam is up? To about what extent do safety valves rise when blowing-off without being eased by hand?

40. Spring-loaded safety valves; what advantages have they that are not possessed by dead-weight valves? What are the disadvantages, if any, as compared with dead-weight valves?

41. Of what pieces does a glass water gauge mounting consist? How does it act? Where is it placed? At what height? Is it liable to derangement? How is its working tested?

42. Glass water gauges have sometimes pipe connections top and bottom; what is the object of this arrangement? Should there be cocks at the extremities of these pipes? Why? Or why not?

43. Describe a Bourdon steam gauge. Some gauges have an inverted syphon pipe below them; what is its use?

44. Why is a small cock sometimes put on the pipe leading to a steam gauge? Where should it be placed, and what error might be made by omitting to use it?

45. Do steam gauges indicate the total pressure of the steam or only a portion of that pressure? What is the pressure measured from?

46. What is meant by the salting of the boiler? How is this prevented? What is the density of ordinary sea water? How is the density ascertained? What is the difference between the formation of scale and the salting of the boiler? What is the maximum density at which boilers should be worked at sea? In the event of condenser tubes leaking, what is the minimum density at which boilers should be worked? Give your reasons.

47. Scum cocks and pipes; how are they arranged? Where are they placed? At what height in the boiler? When are they used? When must they be shut? Neglect of these cocks leads to what dangers?

48. Of what does scale consist? Where is it most objectionable? How is it removed? How is its formation prevented? What evil effects are produced by it?

49. What is a salinometer? Of what does it consist? How does it act? How is it graduated? Can it be used at any temperature indiscriminately?

50. What harm may be done through the check valve of one of a set of boilers being defective while under way? How would you work to avoid this harm?

51. How is the leak from a split tube stopped in a boiler under way? Describe the operation.

52. What is the use of dampers? Where are they fitted? When should they be used?

53. When there are no dampers fitted, what is used instead? What evil to the boiler is sometimes attributed

to this? When the heating surfaces are clean, does this occur?

54. Describe the piston of a steam cylinder; with its different rings and their uses. There are generally round pieces let in flush on one side of a piston; what are they? How are these pieces fixed?

55. Cylinder drain cocks; what is their use? There is sometimes a valve upon each cock; what purpose does it serve?

56. Cylinder escape valves; of what do they consist? How protected? How regulated? When are they most needed? To what danger do they expose the engineer? What precaution is sometimes used to obviate this danger?

57. What is a compound engine? What different kinds are there for screw steamers, in respect to the number and arrangement of their cranks and cylinders? What is a triple expansion engine?

58. What is link motion? What are some of its advantages? In modern engines for the screw propeller when there is no link motion, what takes its place?

59. What is a separate expansion valve? Why is it not fitted to all engines? What effect has an expansion valve upon the starting and upon the reversing of the engine?

60. What arrangement is applied to reduce the friction of a slide valve? To what is the friction due?

61. Describe a loose eccentric; how does it act? In what engines are the loose eccentrics still employed?

62. What is the travel of the eccentric rod? How is it measured on the eccentric? What is the travel of the slide valve when the link motion is in mid gear, and the engine still moving?

63. What are "double beat valves"? What objections are there to their use?

64. What is a circulating pump? Is it always worked by the main engine? Give an example from your last steamer of the three water temperatures generally noted by careful engineers.

65. An air valve is sometimes fitted to a circulating reciprocating pump; what purpose does it serve?

66. What is the difference between a bucket air-pump, a piston air-pump, and a plunger air-pump?

67. Are double acting air-pumps made with plungers, with pistons, or with buckets? Describe the construction and action of circulating-pumps.

68. What is an air-pump trunk? When is it necessary? How is it attached to the bucket? Centrifugal pumps; describe their construction and mode of working.

69. What class of air-pump requires both foot and delivery valves, and in what other class can either of these valves be in some cases dispensed with?

70. What are marine governors? What is their general construction? How do they act?

71. With a surface condenser and a single acting air-pump what is the effect of a leaky foot valve, and what is the effect of a leaky bucket when there is also a foot valve?

72. Where is the air-pump pet cock or valve placed? How does it act? What is its object? Does it in every case reduce the effective capacity of the pump? It is equally applicable to double acting pumps?

73. At what temperature is the hot well worked? What is the effect of higher temperatures? What is the effect of lower temperatures? What limits the lowness of temperature? Has a very low temperature any disadvantages?

74. Bilge injection with jet condensers; what are the fittings required? When is it used? What precautions are necessary in using it?

75. When surface condensers are used, what takes the place of the bilge injection? To what is the connection made? How is its valve formed? Why is this necessary?

76. What are the practical guides to the proper amount of opening of the inlet valve for the circulating pump?

77. Feed-pump pet cock or valve; where is it placed? What is its use? How does it act? Is it always a necessary fitting?

78. What are some of the ways of fastening the ends of surface condenser tubes? About what size and about what thickness are condenser tubes? What parts of a surface condenser are made of brass?

79. What is a blow-through valve or cock? To what is it attached? There is sometimes a valve which, when opened, admits steam from the slide valve casing to the exhaust port; what is its use? To which cylinder is it fitted?

80. What are snifting valves? Why are they generally omitted now?

81. What connections are generally fitted to the donkey pump, and to what services can it be applied?

82. When the engines are stopped in harbour with steam up, what are to be shut and what are to be opened?

83. How is an engine heated up before starting? What precautionary examinations are made before starting?

84. What is an interceptor or catch-water? Where is it fixed, what is its construction, how does it act, and what attention does it require?

85. Describe an air-pump bucket with its valve or valves and its packing. Of what are the valves generally made?

86. Of what materials are air-pump rods made? Why?

87. What is the racing of the engine? When does it occur? What danger attaches to it? What is done to prevent it?

88. When under way, when the air-pump bucket is at the top of its stroke, at what height is the water in the condenser?

89. What is meant by the "pitch" of a screw propeller? How is it measured?

90. Explain the difference between a "right hand" and a "left hand" propeller, and state how each of them revolves.

91. What is the slip of a screw propeller? How is its amount expressed in figures?

92. Which of the valves about engines and boilers have to be worked by hand, which of them are self-acting, and which are worked by the motion of the engine?

93. Why is soda sometimes put into a boiler, and how is it put in when under way? What is the kind of soda used?

94. Tallow cups for cylinders were sometimes made with two small cocks, or with only one small cock, or with one large hollow plug cock or with one small cock and a valve; which of these is suitable for a high-pressure cylinder, and which for the cylinder of a condensing engine? Describe how the cup with only one small cock is used. What is now generally used instead of these? How has this change come about?

95. Does a cylinder escape valve, self-acting allow all the water to escape? If not, how much is left in the cylinder?

96. What is a "Steam Lubricator" (sometimes called an Impermeator)? Explain its action. To what part of the engine is it connected? Will throwing cold water over it make it work faster or slower? Describe the one used in your last steamer.

97. A common paddle wheel; of what is the centre made? Of what are the arms formed? What is the form of the bolts which attach the floats to the arms? How are the arms attached to the centres?

98. Why have some paddle wheels one or more cast-iron floats in each wheel? With what engines are these most required? At what part of the circumference are they placed?

99. Why are paddle wheel floats sometimes made of different breadths in the same wheel? With what description of engine is this most needed? Where are the broad floats placed and where are the narrow floats placed in the circumference of the wheel?

100. What difference is there between a radial paddle wheel and one with feathering floats? What is the object of feathering floats? Are all the eccentric rods attached in the same way, and are they all of the same form?

101. Whereabout is the centre of the eccentric of a paddle wheel with feathering floats placed? In that case are the feathering levers on the striking face or on the back of the float? When the paddle shaft has an outer bearing, how is the eccentric made?

102. Of what materials are the working surfaces of a paddle wheel with feathering floats? How are they lubricated?

103. What is a "Disconnecting Paddle Engine"? At what place is the disconnecting effected? How is it accomplished? In which of the cranks of a disconnecting engine are the crank pins fixed?

104. Is link motion valve gear or the loose eccentric generally used for disconnecting paddle engine? For what steamers are disconnecting paddle engines frequently employed?

105. What are expansion joints? Where are they necessary? What attention do they require? Of what should the working surfaces be made?

106. What omission in the construction of expansion joints may lead to a serious accident when steam is first applied? How is this prevented in the construction of a steam trunnion pipe for an oscillating engine?

107. Describe an oil cup, with a syphon worsted. How is the worsted arranged? How is it cleaned? How far down the tube does it extend?

108. Describe a thrust bearing; which of the surfaces wears? Why is there sometimes a number of oil tubes or one thrust bearing?

109. What parts of a screw shaft are generally covered with brass? Why is this necessary? About what thickness is the brass?

110. What is the stern tube or screw shaft pipe? Why is a pipe of such a length required? Of what is it made? How is it fixed at each end?

111. What is a *lingum vite* bearing? How is the wood fitted? Where is such a bearing generally used?

112. How is a screw propeller fixed on the shaft? What means are used to prevent its getting loose at sea?

113. Where are sluice valves placed? What large sluice valve is there in almost all screw steamers? From what position should this valve be worked? Why so? What attention should it receive?

114. With a condensing engine what valves or cocks are on the skin of the ship in the engine-room and in the stokehold?

115. What are the necessary fittings of a marine boiler?

116. With a surface condensing engine what cocks or valves are opened some time before the engine is started so as to be ready for starting whenever the order is given?

117. What is a steam jacket? What cocks are on it? In what engines are jackets most generally used? Do they require to be felted?

118. What parts of an engine or its fittings should be felted or otherwise protected from radiation?

119. What are the small cylinders sometimes fitted on the slide valve casing cover of vertical engines? Explain their action. To what are they connected by a pipe? Why?

120. Name the principal pipes in connection with the engines and boilers of a steamer, and state to what the ends of these pipes are connected?

121. Through what cocks or valves, pipes and chambers does the water pass on its way from the sea inlet rose plate to the water space of the boiler, with a jet condenser?

122. Through what cocks or valves, pipes and chambers does the circulating water of a surface condenser pass?

123. Through what cocks or valves, pipes and chambers does the steam pass from the boiler until it is in the form of water in the hot well?

124. Name the pieces of the engine through which the pressure of the steam is transmitted from the piston to the screw propeller. Name them in the order in which they act.

125. What is an air vessel? How does it act? At what parts of an engine or its fittings are air vessels generally applied?

126. What is the construction of a mudbox? Where should mudboxes be placed? Why are they necessary? How should the space be divided by the rose plate, and why?

127. What is a trunk engine? Why has it fallen into disuse?

128. What is an oscillating engine? For what steamers are oscillating engines generally adopted? Why? How is the steam conveyed to and from the slide valve casing?

129. Of what parts does the valve motion gear of an oscillating engine consist?

130. For what have geared engines sometimes been used? Of what were the cogs or the large wheel made?

131. At what part of a screw steamer is the pressure that propels it applied to the hull?

132. At what part of a paddle steamer is the pressure that propels it applied to the hull?

133. About how much fuel per indicated horse-power per hour is required by modern steam engines, common compound, and triple expansion?

134. What is the explanation of the economy of the surface condenser?

135. What is the construction of a surface condenser? Of what are its tubes made? How are they fixed? How are they kept tight? What is done with a split tube?

136. Where do surface condensers foul? How are they cleaned?

137. What non-conducting substances are employed to prevent radiation, and how are they applied?

138. In the construction of smoke-box doors and of dry uptakes, what provision is made to lessen the amount of radiation?

139. How can the formation of excessive smoke be prevented? Describe smoke preventing apparatus.

140. What is meant by "circulation" in a boiler, and what are the results of defective circulation?

141. What means are sometimes adopted to improve the circulation in a boiler?

142. By what arrangement is the circulation promoted in a "hay-stack" boiler?

143. Describe a ship's side air-pump discharge valve. In what respects does it sometimes differ from a common stop-valve, and what attention does it require?

144. What is the construction of a feed escape valve, to what is its discharge connected, and how is its loading regulated? Where should the escaping water flow?

145. When there is no feed escape valve, what is the arrangement of the feed valves or cocks?

146. What is the measure of a horse-power? How is indicated horse-power ascertained?

147. Has "nominal horse-power" a fixed meaning? What is the use of this expression? What is generally taken as the measure of one horse-power nominal?

148. What is "back pressure" in a cylinder? About how much is it in each of the cylinders in your last steamer? Is excessive cushioning ever a trouble under certain conditions in modern engines? Say when and why and in which cylinder this occurs.

149. What is meant by "speed of piston"? About how much is the speed of piston in modern marine engines?

150. What is "atmospheric pressure"? What is its average amount? What instrument tells this amount?

151. What is "gross pressure" or "absolute pressure"? What pressure is it that is shown by the steam gauge?

152. What is meant by "cutting off" steam? How is it done? What part of the valve regulates the cut off?

153. What is a piston slide valve? Describe its construction. Why are they frequently employed in place of the common slide valve? Have they any disadvantages compared with a common slide valve? If so, name them.

154. What fixes the time of closing the exhaust? After the exhaust is closed and before the port opens for steam what becomes of the steam that is in the cylinder?

155. What is the "lead" of the valve? What is its object? About what amount is it?

156. What is the "cover" or "lap" of the valve? What is its object? About what proportion of the stroke of the valve is it made?

157. What is the "exhaust cover" of a slide valve? What is its effect upon cushioning and upon exhaust?

158. What is "minus cover" or "minus lap" on the exhaust? What is its effect upon the exhaust and upon cushioning?

159. What is "cushioning" or "compression" in a steam cylinder? How is it affected by the amount of cover or of minus cover there may be upon the exhaust? How is it affected by the exhaust pressure?

160. What is "mean effective pressure"? How is its amount ascertained?

161. What is a dial vacuum gauge? What is its construction? For what is it used? About what amount should it show when the engine is working all right? What effect have the variations it indicates on the performance of the engine?

162. Does the vacuum gauge enable you to tell what pressure there is in the condenser, or must you have recourse also to the barometer to arrive at that? How would you ascertain the actual amount of back pressure there is in the condenser?

163. What is a barometer? What is its construction? Is a barometer sometimes used instead of a vacuum gauge? In what respect does the weather barometer differ from the vacuum gauge barometer?

164. The common vacuum gauge and the common steam gauge, in which of them are the graduations marked from atmospheric pressure? Does either of them tell what is the true actual pressure in the boiler or in the condenser?

165. Do steam and vacuum gauges vary with the variations of the weather barometer? When the weather barometer varies from 29 to 31 how much will the vacuum gauge vary and how will that affect the working of the engine? Why?

166. Vacuum is generally stated as so many inches. What is meant by, say, 20 inches vacuum? What does that tell us about the absolute pressure of the vapour then in the condenser?

167. From what depth will a pump draw water? Is there any limit? Why?

168. What is vacuum? Can vacuum move a piston? When the temperature of the water in the condenser is 212° Fahrenheit, what is the greatest degree of vacuum there can then be in the condenser?

169. What is a thermometer? What is its construction? What is the property of matter that is the principle of its construction? What temperatures are regularly noted by careful Engineers?

170. What is the temperature of (1) melting ice, (2) boiling water, (3) steam about 60 lbs. pressure by the steam gauge, (4) steam about 100 lbs., (5) steam about 150 lbs., (6) smoke in the funnel, (7) water in the hot well?

171. What is meant by the "conduction" of heat? Give examples of it in the boiler and in the engine.

172. What is meant by the "convection" of heat? Give examples of it in the boiler and in the engine.

173. What is meant by "radiation" of heat? Give examples of it in the boiler and in the engine.

174. Which is convection, which is radiation, and which is conduction in the following cases:—(1) Heat from the glowing-fuel to the furnace crown? (2) Heat passing from one side of the furnace crown plate to the other? (3) Heat passing from the steam pipes in the engine-room? The heat of evaporation?

175. What are the effective heating surfaces of a marine boiler?

176. What parts of a marine engine are exposed to danger when the temperature is below freezing point?

177. What precautions, are necessary in cold climates when the temperature is below freezing point?

178. State as many ways as you can by which a boiler might not get its full feed. A boiler or one of a set of boilers, gets short of water although the feed valve is open its proper amount; to what causes might this be due?

179. Of what are furnace bars generally made? About what thickness are they at the top? About what space is between them?

180. About how many tons of steam coal will be burnt per day in four furnaces, each 3' 0" wide, and of about the usual length? On what ground do you say so?

181. About how many tons of steam coal will be burnt per day with a good triple expansion engine, surface condensers, the low pressure cylinder 40 inches diameter, doing average work? On what grounds do you say so?

182. A pair of inverted cylinder direct acting engines, there is a liner half an inch thick between the ahead eccentric rod and the accentric strap, in overhauling the engine this place is lost and forgotten; what difference will its omission make in the working of the engine, on the admission, on the cut off, and on the exhaust of the steam? Which will take place earlier and which later, distinguishing between the up stroke and the down stroke?

183. In a pair of inverted cylinder direct acting engine driven a right hand screw, on which of the crosshead guide bars is the pressure greatest in the up stroke, and on which in the down stroke?

184. A screw propeller is getting loose, it has a little play on the shaft, sideways on the key or feather; how will this show in the engine room?

185. How would you prove whether the centre line of the trunnions of an oscillating cylinder be fair with the centre line of the main shaft?

186. How can the fairness of a line of screw shafting be tested without lifting the shafts?

187. Where are steel forgings generally used in marine engines?

188. What is the composition of nickel-steel? Where is it sometimes used in engines and boilers?

189. How is forced draught generated on board ship and supplied to boiler-furnaces? Is the air heated before delivery? If so, how?

190. What is "induced" draughts? Compare the merits of "forced" and of "induced" draught.

191. How is the intensity of forced or induced draught measured? What is the usual pressure employed in the mercantile marine?

192. An explosive gas is liberated from bunker coal. Usually in well-ventilated bunkers this gas escapes into the atmosphere without doing harm. In ill-ventilated bunkers the gas after mixing with a certain proportion of common air has been known to explode when a naked light has been brought into contact with it. What is the composition of the gas? Where is it found, in bunkers, pockets and coal shoots? How may it be got rid of as soon as it evolves from the coal? How many cubic feet of air to one of the gas forms a violent explosive mixture?

193. A lighted lamp or candle has sometimes been lowered into an apparently empty paraffin tank and produced an explosion resulting in injury to the person holding the light. What did the tank probably contain, and what produced the explosion?

194. In vessels carrying coal cargoes it has been observed that, generally speaking, the gas which escapes from the body of the coal is found more abundantly at the forward end of the hold than at the after end. Why should this be so?

195. In recently opened ballast tanks, double-bottoms, and boilers, a light lowered into either has sometimes been extinguished. What would, in all probability, cause this?

196. In double-bottom steamers where does the bilge water lie, and where are the roses of the bilge pipes fitted?

197. What is the advantage of a large rose over a small one?

198. Why, especially in vessels carrying cargoes liable to shift, should engine bilge suction be fitted to both wings of the bilge?

199. In a heavily listed vessel, why is it difficult to keep steam?

200. What means are sometimes provided for temporarily coupling together the broken parts of, say, a tunnel-shaft? Describe the fitting.

201. Does the pressure on the thrust-collars vary with the horse-power or with the speed of the ship, or how?

202. If the holding-down bolts of a thrust-bearing should become slack, what effect would it have upon the working of the engines?

203. In an engine with three cranks, which of the three is subject to the greatest torsional stress (1) in going ahead, (2) in going astern?

204. Is it usual to make the crank shaft of a triple or quadruple expansion engine in one piece? And is the diameter of the shaft uniform from end to end? Give your reasons for the practice which obtains.

205. In a "built" crank shaft how are the webs rigidly secured to the pins and to the body of shaft?

206. There are various descriptions of donkey engines in use on board ship for pumping purposes. Some pumps are fitted with escape-valves, some are not. Why should this be?

207. Explain the function of an air vessel fitted to a feed pump. Make rough hand sketches of (1) a satisfactory vessel, (2) an unsatisfactory vessel, where say, the air spring has been destroyed by carelessness, or has never been properly provided.

208. Should cocks or escape valves be fitted to air-vessels? Why, or why not?

209. Where, by preference, should the escape valve of a feed pump be placed? Why?

210. Scum cocks are sometimes fitted to boiler-shells at a height convenient for engineers to manipulate when standing in the stokehold; the scum pipes in such cases are laid upward, inside the boiler, to a little above the combustion chamber tops. What danger may arise from this arrangement?

211. Cocks for testing the water level of boilers are sometimes fitted within reach of the engineer who is standing in the stokehold. These may have internal pipes leading upward and terminating at various levels. Under what circumstances may these become misleading?

212. Why should the pipe which leads from the bottom of the water-gauge column to the bottom of the boiler-front, or back, be covered with non-conducting material? Why also should it never have lengthy horizontal bends?

213. In your own experience, how frequently is this pipe removed and cleared?

214. Why even with the best of water-gauges, is it advisable occasionally to use the drain-cock?

215. Steam loops have sometimes been inadvertently made in the length of piping leading from the top of the water-gauge column to the top of the boiler. Roughly sketch such a loop and explain the danger arising from its existence.

216. Describe your method of thoroughly testing the water-gauge system to satisfy yourself that all the cocks and pipes are clear. Your answer can be written on a supplementary sheet of foolscap, which the examiner will hand you. Hand sketches, mere lines indicating pipes, and circles indicating cocks should be made. Identify the cocks and pipes by letters or numerals.

217. Describe the construction of a water-tube boiler, mentioning the type selected.

218. In a water-tube boiler how is an economiser fitted, and what is its duty?

219. How is the water-gauge fitted in a water-tube boiler? Are glass-gauges used?

220. The pressure of the steam in water-tube boilers is sometimes greater than at the engines. Why is this, and what percentage above the engine pressure does it amount to? How is this difference of pressure maintained?

221. Describe any automatic method of feeding water-tube boilers. Of what material are the tubes made?

222. Describe the construction of any steam turbine you are acquainted with, which is used on board ship. How is

the expansion of steam effected? How many propeller shafts are employed, and how many propellers?

223. Is the same power in a steam turbine available to go astern as to go ahead?

224. Of what material are the propellers made in a steam turbine?

225. How many pounds of coal per indicated horse-power per hour are burnt with turbine engines? Name the type of boiler in use.

226. Describe the construction of a feed-water-head and give the name of its manufacturer.

227. To about what temperature is the feed-water raised by passing through a feed-heater?

228. What fittings are usually placed on a feed-heater? Why are they necessary?

229. Describe any well-known independent feed-pumps.

230. Are independent feed-pumps automatic in their action? Explain the action.

231. What advantage, if any, have independent feed-pumps over feed-pumps worked by the main engines?

232. Describe the construction of a feed-filter, enumerating its valves and cocks.

233. How can the filter be cleaned? What ingredients are generally removed when cleaning takes place?

234. What is the intercepting material in a filter made of? How is it fitted?

235. Describe an evaporator, and mention the type.

236. What fittings are necessary with evaporators?

237. How is the brine got rid of in an evaporator?

238. How may the evaporator coils be cleaned?

239. What is a dynamo? Describe its various parts. For what is it used?

240. In what respect does an electric motor differ from a dynamo? Where are electric motors sometimes used on board ship?

241. Describe a system of electric lighting employed on board ship.

242. How is the position of a fault in the electric circuit discovered?

243. What is "sparking" and may it under some circumstances (naming them) be a danger?

244. What is "short-circuiting," and to what evil may it give rise?

245. What means are employed to prevent any part of the circuit becoming overheated?

246. Describe the features of an arc-lamp.

247. Describe the construction of a glow-lamp.

248. What is the usual candle-power of the small glow-lamps in general use on board ship?

249. Define the following terms: Ampere, volt, ohm, watt. What is the measure of an electrical horse-power?

250. Explain the uses of switches, brushes, commutators, cut-outs, field-magnets, armatures and resistance-coils.

251. Why is it desirable to fit a dynamo in a cool place on board ship?

252. What undesirable effect will ultimately occur to an electric wire whose sectional area is constantly diminishing, say, through corrosion?

253. What danger might arise from leading electric wires through coal bunkers?

254. Is it better to lead electric wires above or below side-scurtles? Why?

255. What instruments are used on board ship to ascertain the strength of an electric current?

256. In vessels fitted with hydraulic cranes, etc., where do they obtain their power? How is the hydraulic pressure kept at a relatively constant amount?

257. Describe any steam-steering gear you are acquainted with.

258. When the helm is put hard over and the ship is going full speed ahead, what prevents the rudder returning to the amidship position?

259. In the case of a steamship under way, does the officer or man manipulating the steam-steering wheel overcome any resistance exerted by the rudder?

260. Explain clearly what is being done by a helmsman manipulating the wheel of a steam-steering engine.

261. Is there any difference between the amount of horse-power required to put a helm hard over, in a given time, when the vessel is going full speed ahead, and when she is going full speed astern? This question refers to the case of a steamer fitted with one rudder only, and demands a more complete answer than merely "yes" or "no".

262. What precautions should be taken before removing a man-hole-door of a steam-boiler? In the absence of such precautions, what casualties might occur?

263. Describe the chief features of the engine-governor fitted to a steamer you have served in. Describe its action, give the maker's name and name of ship.

264. Name the principal parts of internal combustion engines, and briefly state their functions.

265. What kind of oil is usually employed in motor-engines? What is its flash-point? What is its specific gravity? What is its calorific power? What precautions are taken in its storage to guard the public against the casualty by fire or explosion?

266. How many cylinders are generally used in motor-engines? What kind of pistons are usually fitted? How frequently (measured in revolutions) is explosion per cylinder effected? How is explosion in the cylinder carried out?

267. Describe how an oil-motor is started. If starting proves difficult, where would you chiefly look for defects? How is piston speed modified? How is the speed of vessel varied? How is reversing effected?

268. Before examining an oil-motor with a naked light, what steps should be taken for safety's sake?

269. How frequently should an internal combustion engine be opened up for examination, cleaned, and its parts readjusted? What difficulty arises when the internal parts become foul with carbonized oil?

NOTE.—Questions should be read in the light of their context. Thus the "sparking" referred to in question 243 relates to the sparking in an electric lighting circuit on board ship. (See question 241.)

APPENDIX C

[See Rule 29 (d)]

Reading the Water-Gauges

(Engineers and Engine-drivers)

Notwithstanding that reading of the water-gauge is made a special feature in the examination of Engineers, many boiler casualties result from the Engineer of the watch either not understanding the construction of the water-gauge fittings or not satisfying himself by actual trial that the cocks, pipes, etc., are clear.

In one case, two furnace crowns came down in a steamer that was just starting on a voyage. The Engineers were satisfied that there was plenty of water in the boiler because the water-gauge showed full glass, and they called the attention of the Surveyor to this fact as being conclusive evidence that the casualty could not have resulted from shortness of water. On examination of the fittings, however, it was found that the cock between the boiler and the steam pipe leading to the gauge was shut, having been carelessly left in that position on the previous day when the mountings were overhauled for survey. Directly the cock was opened the water disappeared from the gauge-glass, and the Second Engineer admitted that he had blown down the boiler in order to lower the water level, as the glass was full.

Many steamers have had their furnaces brought down at sea in a similar manner to the above through what the Engineers of the watch have called "false water in the glass," and which on examination has been found to result from the top communication being choked.

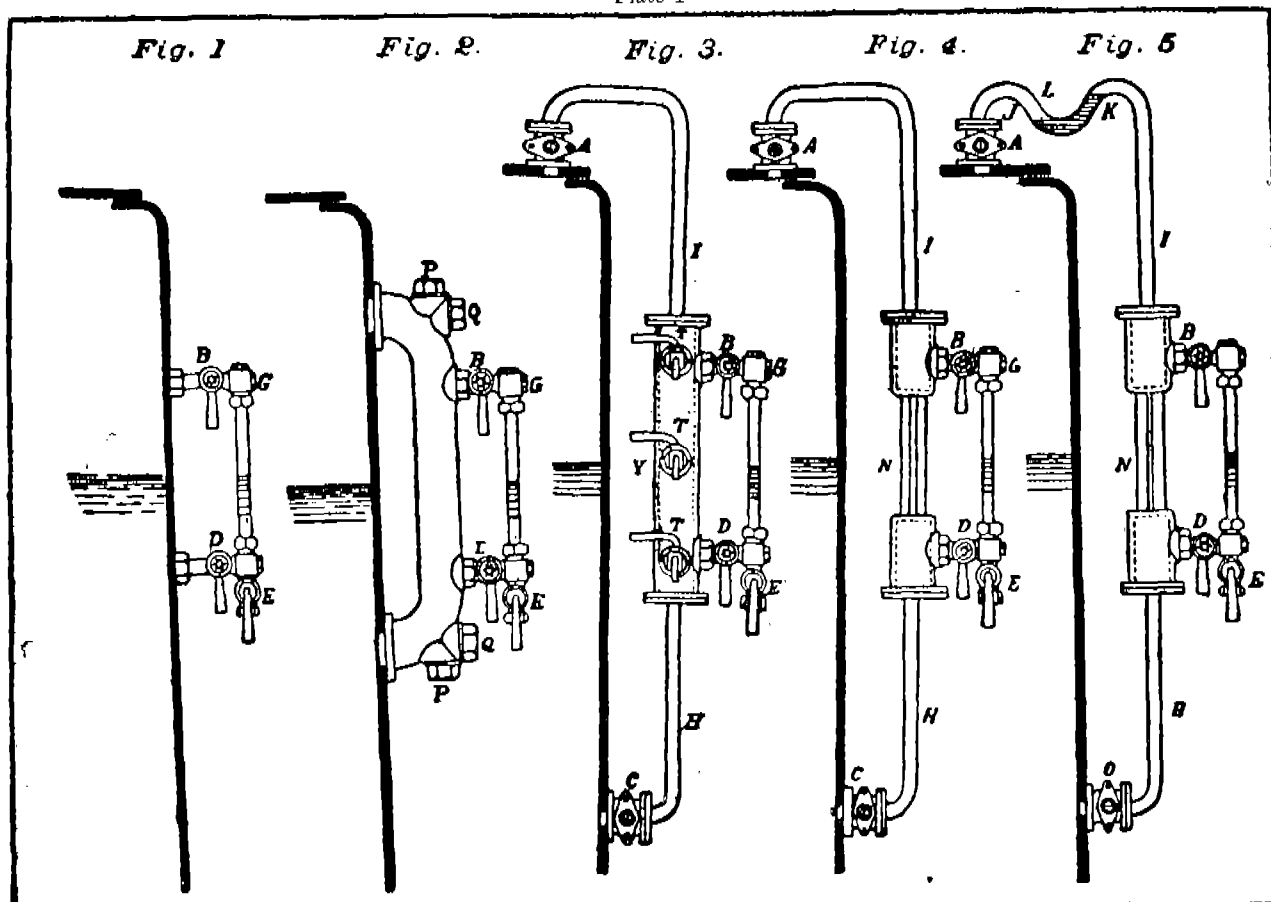
These casualties resulted from what, to say the least, was bad management, not false water.

Unless a candidate under examination is able to prove that he understands how to verify the indications of the water-gauge, he should not be passed in practical knowledge and, as failure in practical knowledge involves the candidate going to sea for another three months before being eligible for re-examination, the Examiner should

explain to such candidate his error, after failing him, in order to prevent further casualties resulting from his want of knowledge on this subject.

The sketches, Figures, 1, 2, 3, 4 and 5, Plate I, represent the usual methods of attaching water-gauge mountings to marine boilers. The important features in each gauge and the method of verifying its indications are dealt with separately in the following remarks:—

Plate 1



REFERRING TO FIGURE 1 ONLY

In this case the water-gauge cocks are attached direct to the boiler, and the accuracy of the gauge when the boiler is under steam can be tested as follows:—

First.—Let B remain open, then close cock D and open cock E, and if steam issues it proves that cock B and the passage through the top fitting and gauge-glass are clear. If no steam or water issues, either cock B or the passage through the top fitting and gauge-glass is choked and the gauge cannot act properly until the obstruction is removed.

Second.—Close cock B and open D and E, and if water issues, cock D is clear. If no water or steam issues, either cock D or the passage from the boiler through the lower fitting is choked and must be cleared before the gauge can act properly.

REFERRING TO FIGURE 2 ONLY

In this case the gauge cocks are attached to a bent pipe of comparatively large diameter (at least 3 inches in the bore), the upper end of which communicates with the steam space, and the lower end with the water space of the boiler. Owing to the bore of the pipe being large it is not liable to become choked or stopped under the ordinary conditions of working. The water-gauge is, therefore, in practically the same condition as if it were attached direct to the boiler as in Figure 1. This gauge, when at work, is tested in precisely the same manner as the one shown in Figure 1.

Screw plugs are inserted at P.P. and Q.Q., by the removal of which the apertures in the pipe can be cleared, if necessary, by the insertion of a wire or rod when steam is down.

REFERRING TO FIGURE 3 ONLY

In this gauge there is an open communication from A to C through the column Y, and in order to "blow through the glass" it is only necessary to shut cocks D and B

alternately keeping E open. But to "blow through the water-gauge," including the pipes H and I, it is necessary, after blowing through the glass as described above, to shut A and C alternately, at the same time keeping B, D and E open for such time as will ensure the complete discharge of the contents of the gauge and its connections. When B, D and C are clear and A choked the steam lodging in the glass and in the pipe I leading from column Y to A becomes condensed and the water flowing through C to take its place rises in column Y and in the glass to a level above that of the water in the boiler. In other words, the gauge shows a false level. If now E be opened and water is blown out, then on E being again closed the water in the gauge will rise higher than before and be still further misleading. On the other hand, when B, D and A are clear and C choked, the water, if any, in the glass is trapped and no longer rises and falls with the water in the boiler or with the motion of the vessel; it, however, slowly rises in the glass owing to the condensation of the steam in the upper part of the gauge until such time as E is opened when the whole of the water in the glass is blown out, and on E being closed the glass does not show any water notwithstanding that the water in the boiler may be at the proper level. When the test cocks T T T are attached to column Y, as shown in Figure 3, they cease to be reliable when either cock A or C or the pipe in connection therewith is choked, or nearly choked.

REFERRING TO FIGURE 4 ONLY

Sometimes the water-gauge fittings are arranged as shown in Figures 4 and 5 with no passage up the column, the central portion (N) of the column, being simply a pillar or connecting piece of any convenient section between the upper and lower portions to which the cocks B and D are attached.

By this arrangement double communications are obviated and there is no need for what is known as "double shut off" in testing the accuracy of the gauge. When, however, the gauges are constructed in this manner the cocks B and D are unreliable as test cocks in the event of there

being no glass in the gauge. This feature should be carefully noted. Moreover, when in working condition the reduction of pressure in the glass which arises when E is opened causes the water in pipe H to rise above its normal level. This objectionable feature should also be noted.

REFERRING TO FIGURE 5 ONLY

Sometimes there is a bend, L, in the steam pipe. I, leading from cock A to cock B. This has occasionally escaped observation when new boilers have been fitted on board ship. In most cases this bend arises from the pipe being led in an abnormal direction to escape other pipes, beams or fittings near the smoke box. With such a bend the condensed steam collects in the pipe and falls to the bottom of the bend, and in time it completely fills the pipe from J to K. The steam from K down to the level of the water in the glass is thereby trapped and, as condensation proceeds, leads to a reduction of pressure in the pipe below that of the boiler and an equivalent rise of the water in the bend and also in the gauge glass. When the vessel is quiescent the water in the gauge glass increases in height until cock F is opened or until the pressure in the boiler is so much in excess of that in the lower part of pipe I, as to cause the water in the bend to be blown into the gauge glass. In either case instantaneous change to water level in the glass ensues.

In the ordinary course of working the phenomenon described above is more or less modified by the presence of air in the upper part of the gauge and by the rise and fall of the water in the boiler and gauge glass arising from the rolling or pitching motions of the vessel.

OTHER SPECIAL POINTS TO BE NOTED

When the cocks A and C are omitted, as in Figure 2, it is owing to the bore of the stand pipe being sufficiently large to enable it to be regarded as part of the boiler. Such

pipes require, however to be examined and cleared at intervals by passing a rod through the holes provided for the purpose at P.P. and Q.Q.

Cocks at A and C are not necessary for the testing of gauges arranged as shown in Figures 4 and 5. Examiners ought, however, to make sure that candidates are aware of the impossibility of testing the reliability of the indications of water-gauges arranged as in Figure 3 when the cocks A and C are absent and of the effect which the choking of cock A or C, or pipe II or I has on the indications of the test cocks T T T attached to column Y.

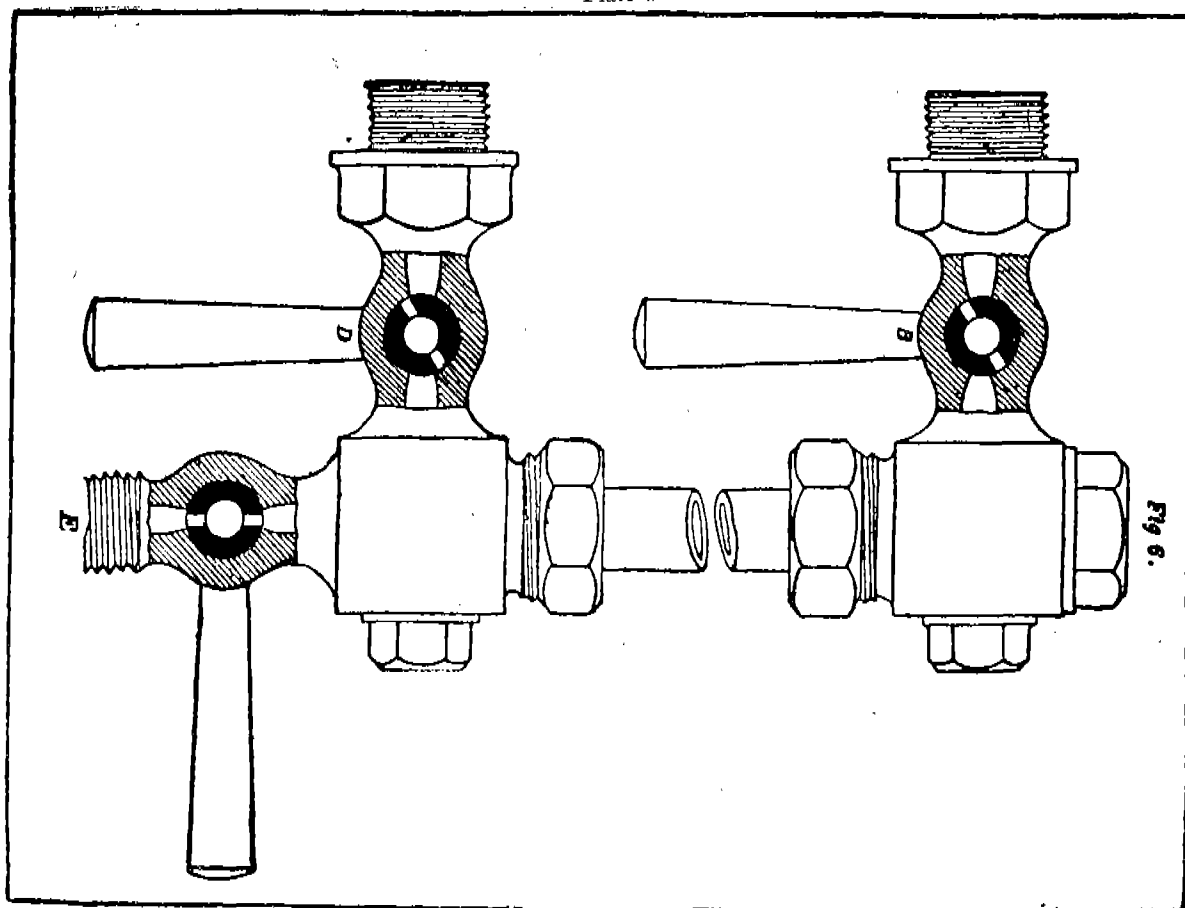
Probably more than half the steamers afloat are fitted with water-gauges as shown in Figures 3 and 4, and it is therefore specially important that Engineer candidates should thoroughly understand their construction, the principle on which they act, and the steps which must be taken to keep them in an efficient condition.

When fitting a gauge glass into its place it is specially important that it should not be placed so high as to prevent a clearing rod being inserted at G, Figures 1, 2, 3, 4 and 5. This defect, especially if it occurs in a water-gauge attached to a boiler subject to priming, permits a rapid accumulation of scum around the top of the glass and results in the choking of the orifice leading from cock B to the gauge glass in each of the figures.

When a gauge glass is too short or is placed either too high or too low in the fittings, it is also liable to become choked by the packing material being forced over its ends by the glands whilst being screwed up.

The use of unsuitable or insecure internal pipes in connection either with the ordinary glass gauge cocks of the description shown in Figure 1, or with test cocks which are joined to the boiler itself should also be carefully guarded against.

Plate 2



Boiler casualties have resulted from the cocks B and D having the parts wrongly placed as shown in Figure 6, Plate 2. In one case of that kind, the Engineer in testing the water-gauge omitted to see that the passages in the cocks B and D were clear *when the handles were in their proper working position*. This defect could easily have been discovered if proper attention had been paid to the condition of the cocks. A defect of this nature may be due to faulty construction originally, or to the handle of the cock having been overstrained, and the neck twisted. Whether the passages in the plugs are fair and clear can, however, be verified in a few minutes. As an illustration, the water cock D, Figure 6, Plate 2, can be verified by

blowing through E with B shut and then moving the handle of D to one side until it is just closed, and then to the other side until it is again just closed; the proper working position of the handle is about equally distant from each of the above position. The other cocks can be verified in the same manner.

Another serious casualty occurred through the handle of the cock A, Figure 3, having been twisted from its original position relatively to the orifice of the cock, resulting in the cock being shut when apparently open.

When a water-gauge, that is clear in all its parts, has been thoroughly blown through, the water in the glass

risers above the level at which it formerly stood, immediately the drain cock E is closed, but if left undisturbed for a time it gradually falls to its former position. The amount of rise which occurs on these occasions depends chiefly on the temperature of the contents of the boiler and on the length of the pipes by which column Y is connected top and bottom to the boiler, but in cases where the gauge is of the description illustrated in Figures 3, 4 and 5, it amounts in high pressure boilers to about 4 inches, while the time occupied by the water in returning to its former level ranges from 30 to 40 minutes. The cause of this rise is twofold, namely, (a) the displacement of the comparatively cold water in pipe H by hotter, and proportionately lighter, water from the boiler, and (b) a slight condensation of the steam and a corresponding fractional reduction of pressure in pipe I. The cause of the gradual subsidence of the water in the glass to its former level is also of a dual character, namely, (a) the cooling of the water in pipe H, and (b) the diminution in the condensation of steam in pipe I owing to the collection therein of air released from the steam condensed.

These results will, however, be somewhat modified if the water in the boiler is of higher density than in pipe H, and this will nearly always be the case owing to the condensation of the steam in the glass and upper fittings of the water-gauge, causing the water in the lower part to be fresher than that in the boiler.

The Examiner should impress upon candidates the necessity for periodically blowing through the water-gauge on each boiler (no matter what the form may be) in a systematic and thorough manner, and, in cases where a boiler is fitted with two water-gauges, of keeping both in constant use; finally, he should further impress upon them the necessity for keeping the water-gauges well lighted, clean, and in all respects efficient.

APPENDIX D

[See Rules 29 (n) and 29 (o)]

Examination in rough working drawing for an Engineer's Certificate of Competency

1. The regulations in regard to the qualifications of a candidate for an Engineer's certificate of competency specify that—

He shall be required to make an intelligible hand sketch, or a working drawing of some one or more of the principal parts of a steam-engine, and to mark in, without a copy, all the necessary dimensions in figures, so that the sketch or drawing could be worked from.

He must be able to state the general proportions borne by the principal parts of the machinery to each other.

2. In accordance with these clauses, a candidate for an Engineer's certificate is required to make a rough working drawing of the parts specified. An Engineer who has been some years in charge of marine engines and boilers ought to have familiarly in his mind the general construction of at least one set of engines and boilers, say, that set he was last with. Fine drawing is not expected, and in the proportions of the parts a wide margin will be allowed; absurd dimensions will be failure in practical knowledge.

3. The drawing must, however, be practically a working drawing, giving a sufficient number of views to show the parts fully—sections, plans, or elevations—just as the candidate would require to be supplied to him if he had to make the parts represented to the design of another person.

4. A clear hand sketch showing the construction completely, and fully dimensioned, will be accepted if the candidate prefers this alternative.

5. A portion only of the parts specified may be accepted in place of the whole if that portion is sufficient to show that the candidate has a good practical idea of the construction of the parts, and a fair notion of their general proportions or dimensions.

6. Candidates are cautioned not to put on paper what they have not fully considered, and deliberately intend to be understood, as evidence of what they know about the construction of any part required.

7. The statements given in by a candidate may be in themselves, apparently, of little importance, but, as sample material from which the extent of the candidate's knowledge of engines and boilers is to be inferred, every detail which is glaringly inconsistent with a sound knowledge of the use of the part, or in which an essential consideration has evidently been overlooked, is an important element in the description which the candidate is giving of his own qualifications.

8. The candidate is advised not to begin more than he can clearly finish in the time allowed. An important object in this part of the examination is to ascertain whether the candidate can be trusted to mark all necessary dimensions upon a sketch or a drawing. The test of this is, practically, the making of the part from the sketch without having to supply additional dimensions, and without measuring the drawing. To prove this ability the candidate must fully dimension the parts shown in his sketch or drawing, notwithstanding that the parts may be correctly drawn to Scale A drawing is fully dimensioned when no part of it is left to the option of the party who is to work to the drawing.

9. To prevent misunderstanding, however, when the candidate has been led into showing more of the details than he has time fully to finish, he should name in the statement on the other side, the particular parts which he has fully dimensioned.

10. All dimensions should have lines and darts, to indicate distinctly the points between which the dimensions are given.

11. Beware of writing cross dimensions upon centre lines, or upon longitudinal dimension lines. This is not an order, but a recommendation.

12. The candidate is not expected to design anything; he has merely to sketch or draw something with which he is expected to be already familiar. At the same time he should call attention to any defect in the design of the article or apparatus. Omission to do so will imply want of practical knowledge.

13. Pencil in nothing after half-past 3: all the dimensions, the figures, and the darts must be inked in; employ the remaining time in examining the drawing and in inking in any figures which may have been before overlooked and in checking the dimension.

14. Make sure that you will have sufficient room on the drawing sheet to show all the necessary views. You can have another sheet of drawing paper if necessary. All the paper used must be forwarded with the drawing.

SPECIMEN

Subject for examination in rough working drawing
(read the foregoing general instructions)

A common slide valve with its spindle. Show also an outline section of the parts at the cylinder face. Show the provision for connecting the side valve to the spindle.

The candidate is requested to fill up the following and to attach this paper to his drawing:—

Statement by the candidate

The accompanying drawing, made by me this day, without referring to any document, and without the assistance of any person, is intended by me to be sufficient for the new construction of the parts above described to fit the places of similar parts which are to be removed. The construction is similar to what I have been with in the steamer , but the dimensions may be different*.

The diameter of the cylinder is

The stroke of the piston is

The travel of the valve is

The cover at top end on steam side is

The cover at bottom end on steam side is

The lead at top is intended to be

The lead at bottom is intended to be

The inside cover is or

The thickness of the face of valve is

The thickness of the body of valve is

* Run the pen through the words that do not apply.

The greatest opening for steam will be
That gives an area equal to one th of the piston.
The opening for exhaust when the crank is on the top centre is
That gives an area equal to th of piston.
The length of the connecting rod is
The valve will cut off steam
on the down stroke at
The valve will cut off steam
on the up stroke at

The candidate may omit this part if he chooses.

It is required that all the parts shall be fully dimensioned in ink, but if owing to want of time this has not been done, the parts not fully dimensioned must be stated, otherwise it will be understood that the candidate considers the dimensions given sufficient.

The parts fully dimensioned are
Dated at this day of 19 .
Candidate.

APPENDIX E
(See rule 4)

Application to be examined for a certificate of competency as engineer of a steam-vessel
 engine-driver of a motor-vessel
having engine of any nominal horsepower
less than 100 nominal horsepower
less than 40 nominal horsepower
any brake horsepower
less than 565 brake horsepower
less than 226 brake horsepower

plying in the Port of Cochin.
Note.—This form can be obtained at the office of the Principal Officer, Mercantile Marine Department, Madras, free of charge.

Divisions (A), (B), (C), (D), (E), and (G) of this paper are to be filled in by the applicant for examination before the said Principal Officer or such official as may be appointed by him in this behalf and handed over to him with the candidate's testimonials and former certificate, if any. No remuneration or gratuity whatever must be offered to or received by any officers or servants of the Crown, beyond the fees mentioned in the Regulations. Any officer, messenger or servant of the Crown who accepts any present or gratuity, shall be immediately discharged from his office, and any candidate so offering money shall be regarded as having committed an act of misconduct and shall be rejected and not allowed to be examined for 12 months.

(A) Name, etc., of applicant

1. Name at full length.
2. Surname.
3. Father's name.
4. Permanent address, stating town, street and No. of house, and name of person (if any) with whom residing.

(G) List of testimonials and statement of service on shore and at sea.
(The testimonials to be numbered consecutively according to the number given in column 21 below).

No. of testimonials (if any)	Where employed or vessel's name	If service on board vessel			Service of applicant					Trade in which employed	Initials of verifier
		Horse power of engines	Port of Registry and official No. of vessel	Capacity	Date of commencement	Date of termination	Time employed in this service				
							Years	Months	Days		
	22	23	24	25	26	27	28	29	30	31	32

Total service on steam-vessels.
Total service on shore.
Total of above services.

5. Date of Birth.
6. Where born—
 - (a) Town or village and thana.
 - (b) County, Country or District.
- (B) Particulars of all previous Certificates (if any) where issued in the United Kingdom, the British Possessions, or elsewhere.

Nun-ber	Compe-ten-ty or service	Grade	Where issued	Date of issue	If at any time sus-pended or cancelled, state by what Court or authority	Date	Cause
7	8	9	10	11	12	13	14

(C) Certificate now required

15. Grade.
16. Competency or service.
17. Address to which it is to be sent.
- (D) If applicant has failed in a previous examination for the certificate now required, he must here state when and where. If he has not failed, he must state so in writing across this division.
18. Date.
19. Port.
20. Subjects in which he failed.

(E) Declaration to be made by applicant.

I do hereby declare that the particulars contained in divisions (A), (B), (C), (D), and (G) of this form are correct and true to the best of my knowledge and belief; and that the papers enumerated in division (G) and sent with this form are true and genuine documents, given and signed by the persons whose names appear on them. I further declare that the statement (G) contains a true and correct account of the whole of my services without exception.
And I make this declaration conscientiously believing the same to be true. Signed in the presence of the Principal Officer, Mercantile Marine Department, Madras District (The name of such official as may be appointed by the Principal Officer under rule 4 on page 71 ante may be filled in if necessary).

Signature of applicant.
Present address.

Date
(F) Principal Officer, Mercantile Marine Department, Madras District

To examiner.
The declaration (E) above was signed in my presence, and the fee of Rs. has been received by me.

Date
Signature.
Designation.

Note.—The examiner should fill up divisions (H) and (I) and in all cases as soon as possible forward this paper to the Principal Officer, Mercantile Marine Department, Madras District, Madras. If the applicant passes, his testimonials and previous certificate, if any, must be sent with this paper to the Principal Officer, Mercantile Marine Department, Madras District, Madras. The new certificate and the testimonials shall be delivered to the applicant at the address named in Division (C) 17.

34. Date and place of examination.

35. Insert passed or failed against each item below—

(i) In working out the question.

(ii) In the *vica voce* examination.

36. Rank for which passed.

(I) *Personal description of applicant.*

37. Height Feet inches.

38. Complexion.

39. Personal marks or peculiarities, if any.

40. Colour of—

(a) Hair.

(ii) Eyes.

I hereby certify that the particulars contained in divisions (H) and (I) are correct.

This form and the testimonials are forwarded to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Date _____ Signature of the examiner.

To

The Principal Officer, Mercantile Marine Department, Madras District, Madras.

APPENDIX F

(See Note under rule 12)

List of approved technical schools

(I) DAY CLASSES

(a) *Name of School or Institution (for Seniors)*

Adelaide.—School of Mines, Adelaide.
Adelaide.—University of Adelaide.
Auckland, N. Z.—University College Auckland.
Ballarat.—School of Mines Ballarat.
Belfast.—Municipal Technical Institute Belfast.
Benares.—Engineering College of the Benares Hindu University.
Birmingham.—University of Birmingham.
Birmingham.—City of Birmingham Municipal Technical College, Suffolk Street, Birmingham.
Bombay.—Victoria Jubilee Technical Institute Bombay.
Bradford.—Municipal Technical College, Bradford.
Brighton.—Municipal Technical College, Brighton.
Brisbane.—Technical College, Brisbane.
Bristol.—Mercantile Venturers Technical College, Bristol.
Bristol.—University College, Bristol.
Cambridge.—University of Cambridge.
Cardiff.—The Technical College, Cardiff.
Cardiff.—University College of South Wales and Monmouthshire, Cardiff.
Christchurch, N.Z.—(Canterbury College), Christchurch.
Cork.—Crawford Municipal Technical Institute, Cork.
Dartmouth.—Royal Naval College, Dartmouth.
Devonport.—Royal Naval Engineering College, Devonport.
Dublin.—University College, Dublin.
Edinburgh.—Heriott Watt College, Edinburgh.
Glasgow.—Royal Technical College, Glasgow.
Glasgow.—James Watt Engineering Laboratories, Glasgow University.
Hobart.—University Hobart.

Huddersfield.—Huddersfield Technical College, Huddersfield.

Hull.—Municipal Technical College, Hull.

India.—Indian Mercantile Marine Training-Ship "Dufferin."

Insein.—Government Technical Institute, Insein.

Karachi.—N.E.D. Civil Engineering College, Karachi.

Lahore.—Maclagan Engineering College, Lahore.

Leeds.—The University of Leeds.

Liverpool.—The Faculty of Engineering, The University of Liverpool, Liverpool.

London.—Central Technical College London, S. W.

London.—Battersea Polytechnic, London, S.W.

London.—City and Guilds Technical College, Finsbury, London E. C.

London.—East London College (University of London), Mile End Road, London, E.

London.—Electrical Standardising, Testing and Training Institution, Southampton Row, London, W.C.

London.—King's College Strand, London, W.C.

London.—Northampton Polytechnic Institute, Clerkenwell, London, E.C.

London.—Polytechnic School of Engineering, Regent St. London W.

London.—St. Olave's Grammar School, London, S.E.

London.—South Western Polytechnic, Madrasa Road, Chelses, London, S.W.

London.—University College, Gower Street, London.

Loughborough.—Loughborough College, Leicestershire.

Madras.—College of Engineering Guindy (Madras).

Manchester.—Manchester Municipal College of Technology, Manchester.

Manchester.—University of Manchester, Manchester

Melbourne.—Footsary Technical College, Melbourne.

Melbourne.—Swinhourns Technical College, Melbourne.

Melbourne.—Technical College (Working Men's), Melbourne.

Melbourne.—University of Melbourne.

Natal.—Natal University College (Howard College), Durban

Newcastle-on-Tyne.—Armstrong College, Newcastle-on-Tyne.

Newcastle-on-Tyne.—Rutherford Technical College, Newcastle-on-Tyne.

Newcastle, New South Wales.—Technical School, Newcastle

Ostbourne.—Royal Naval College, Osborne.

Oundle.—Engineering Department of Oundle School, Northants.

Perth, Western Australia.—University of Perth.

Poona.—College of Engineering, Poona, Bombay.

Portsmouth.—Portsmouth Municipal College, Portsmouth.

Queensland.—Technical School, Ipswich, Queensland.

Queensland.—University of Queensland.

Salford.—Royal Technical Institute, Salford.

Sheffield.—University of Sheffield, Sheffield.

Sibpur.—Bengal Engineering College, Sibpur.

Southampton.—Hartley University College, Southampton

Sunderland.—Sunderland Technical College, Sunderland.

Swansea.—Swansea Technical College, Swansea.

Sydney.—Technical College, Sydney.

Sydney.—University of Sydney.

Tonbridge.—Engineering Department of Tonbridge School.

West Ham.—Municipal Technical School, West Ham.

Wigan.—Wigan and District Mining and Technical College, Wigan.

Wolverhampton.—Wolverhampton and Staffordshire Technical College.

(b) *Name of School or Institution (for Juniors)*

Cardiff.—City of Cardiff Day Preparatory Technical School, Cardiff.

Dublin.—Pembroke—Day Trades Preparatory School Ringsend Co., Dublin.

Exeter.—Junior Engineering and Technical School of University College, Exeter.

Hull.—Municipal Technical College, Hull.

London.—Beaufoy Institute, Junior Day Technical School, Lambeth.

London.—Borough Polytechnic, Day Technical School for Boys, 103, Borough Road, E.C.

London.—Hackney Institute, Junior Day Technical School, Dalston Lane, N.E.

London.—Leyton Engineering and Trade School, Leyton Technical Institute, Leyton, E. 10.

London.—London County Council School of Engineering and Navigation, Day Technical School for Boys, Poplar, E.

London.—Paddington Technical Institute, Junior Day Technical School.

London.—Woolwich Polytechnic, Junior Day Technical School.

Londonderry.—Municipal Day Trades Preparatory School, Londonderry.

Newport (Mon.).—Newport Technical College and Institute (in reference only to Junior classes), Newport (Mon.).

Plymouth.—Municipal Technical School, Junior Day Technical School, Plymouth.

Smethwick.—Municipal Technical School, Junior Day Technical School, Smethwick.

(II) EVENING CLASSES

Name of School or Institution

Belfast.—Municipal Technical Institute, Belfast.

Birmingham.—City of Birmingham Municipal Technical School, Suffolk Street, Birmingham.

Brighton.—Municipal Technical College, Brighton.

Bristol.—Merchant Venturers Technical College, Bristol.

Cardiff.—City of Cardiff Technical Schools.

Darlington.—The Darlington Technical College, Darlington.

Derby.—The Derby technical College, Green Lane, Derby.

Dublin.—Bolton Street Technical Institute.

Dundee.—Dundee Technical College, Dundee.

Edinburgh.—Heriott-Watt College, Edinburgh.

Glasgow.—Royal Technical College, Glasgow.

Greenock.—Greenock Technical School, Greenock (Known as Watt Memorial School).

Huddersfield.—Huddersfield Technical College, Huddersfield.

Hull.—Municipal Technical College, Hull.

Leeds.—University of Leeds.

Leith.—Leith Technical College, Leith.

Liverpool.—Municipal Central Technical School, Liverpool.

London.—Battersea Polytechnic, London, S. W.

London.—Borough Polytechnic Institute, 103, Borough Road, London, S.E.

London.—London County Council School of Engineering and Navigation, Poplar, E.

London.—Northampton Polytechnic Institute, Clerkenwell, E.C.

London.—The Polytechnic School of Engineering, 307, 309 and 311, Regent Street, London, W.

London.—South Western Polytechnic Institution, Manresa Road, Chelsea, S. W.

Londonderry.—Municipal Technical School, Londonderry.

Loughborough.—Loughborough College, Leicestershire.

Manchester.—The Manchester Municipal School of Technology, Manchester.

Newcastle-on-Tyne.—Armstrong College, Newcastle-on-Tyne.

Newcastle-on-Tyne.—Rutherford Technical College, Newcastle-on-Tyne.

Newport, Mon.—Technical College and Institute.

Preston.—Harris Institute, Preston.

Salford.—Salford Royal Technical Institute, Salford.

Sheffield.—Department of Applied Science, University of Sheffield, St. George's Square Sheffield.

Southampton.—Hartley University College, Southampton.

South Shields.—The Marine School, South Shields.

Swansea.—Swansea Technical College, Swansea.

West Hartlepool.—West Hartlepool Technical College.

Wigan.—Wigan and District Mining and Technical College.

Wolverhampton.—Wolverhampton and Staffordshire Technical College, Wolverhampton.

(III) MARINE TECHNICAL SCHOOLS

Name of School or Institution

Aberdeen.—Robert Gordon's Technical College, Aberdeen.

Cardiff.—The Technical College, Cardiff.

Dundee.—Technical College and School of Art Dundee.

Greenock.—Watt Memorial School, Greenock.

Hull.—Municipal Technical College, Hull.

Leith.—Leith Nautical College, Leith.

Liverpool.—Central Municipal Technical School, Byron Street, Liverpool.

London.—London County Council School of Engineering and Navigation, Poplar, E.

South Shields.—The Marine School, South Shields.

(IV) TECHNICAL SCHOOL IN BENGAL AND ASSAM

Senior Technical Schools:—

Kanchrapara Technical School.

Calcutta Technical School.

Bengal Nagpur Railway Apprentices' Night School.

Ordnance Technical School, Ishapore.

Junior Technical Schools at the following places:—

Barisal. Khulna.

Mymensingh. Vishnupur.

Pabna. Ranpur.

Burdwan. Krishnagar.

Rajshahi. Assam.

Bogra. Sylhet.

Comilla. Jorhat.

Faridpur.

(V) TECHNICAL SCHOOLS IN MADRAS PROVINCE

Name of School or Institution

Bellary.—Government Industrial School.

Calicut.—Government Industrial School.

Coimbatore.—St. Joseph's Industrial School and Press.

Coimbatore.—P. S. G. & Sons, Charity Industrial School, Peelamedu.

...Dindugul.—Church of Sweden Mission Industrial School

* Madras.—Government School of Technology.

Madras.—C. N. T. Institute, Vepery.

Madras.—Ramakrishna Mission Industrial School.

Madura.—Government Industrial School.

Mangalore.—Government Trades School.

Tanjore.—District Board Industrial School.

III. Regulations for the grant of permits to Engine or motor drivers of motor/steam vessels of not more than 40 b.h.p./15 nominal horsepower plying in the Port of Cochin.

1. Permits shall be granted to those persons who pass the requisite examinations and otherwise comply with the requisite conditions. For this purpose arrangements shall be made for holding examinations periodically at the Port of Cochin

2. The examinations shall be held by the Port Officer Cochin assisted by the Mechanical Supdt. Cochin hereinafter called the examiner. They shall commence early in the forenoon and shall be continued until all the candidates whose names appear on the list of the Principal Officer, Mercantile Marine Department, Madras District hereinafter called the Principal Officer on the day of examination are examined.

3. Candidates for examination shall make their applications in Form A below, which must be filled in before the Principal Officer, or such official as may be appointed by him in this behalf. The form, properly filled in together with the testimonials, of the applicant's service, which must be based on his employer's office records must be lodged with the Principal Officer not later than three days before the day of examination.

4. Candidates for examination, in making their application in Form A, shall also be required to pay a fee of Rs. 4 to the Principal Officer or such officer duly authorised by him in this behalf.

5. A candidate for a permit must have attained the age of 21 years and must have served in an engineering firm or workshop for at least two continuous years of which not less than six months must have been spent in the capacity of an assistant driver in charge of a motor engine or of a fitter.

6. He must pass a *viva voce* examination satisfying the examiner that—

(i) he fully understands the working and management of motor engines and separate use of magnetos, carburetors, water circulating and oil pumps, sparking plugs, etc., and is able to some extent to explain their actual means of operation;

(ii) he is able to dismantle motor engines and any accessory part of them, detect excessive wear or other defect where it exists, and correctly reassemble the parts;

(iii) he is able to detect what is wrong in the event of the engine failing to start up or the failure of any accessory part to perform its proper duty;

(iv) he is able to show how he would act in case of breakdown of any portion of the machinery;

(v) he is able to show that he fully realises the dangers of fire and understands the precautions necessary to prevent it, and what to do when fire actually breaks out.

7. If the candidate passes, the Principal Officer shall issue to him a permit in form B below.

FORM OF APPLICATION

FORM A

Application for a permit to act as Engine or motor driver of a motor/steam vessel having engines of 40, or less than 40, brake horsepower/15 or less than 15 nominal horsepower plying in the Port of Cochin.

(1) Name of applicant in full.

(2) Father's name.

(3) Permanent address of applicant.

(4) Date and place of birth of applicant.

(5) If failed in previous examination, and if so, when and where.

I hereby declare the above statement to be true.

Signature of applicant.

Present address of applicant.

Dated at this day of

(6) The above declaration was signed in my presence and the fee of Rs. 4 has been received by me.

Signature.

Designation.

(7) List of testimonials and statement of service—

No. of testimonials produced	Where employed	Date of commencement of service	Date of termination of service	Time employed in this service	Remarks

(8) Certificate of examiner—

(a) Date and place of examination.

(b) Passed/Failed.

(9) Personal description of applicant—

(a) Height.

(b) Complexion.

(c) Personal marks.

(d) Colour of hair.

(e) Colour of eyes.

I do hereby certify that the particulars contained in Nos. 8 and 9 are correct.

This form and the testimonials are forward to the Principal Officer, Mercantile Marine Department, Madras District, for issue of a "Permit".

Signature of Examiner.

Dated at this day of

FORM B

Permit to take charge of engines of a motor/steam vessel of 40 brake horsepower or less/15 nominal horsepower or less plying in the Port of Cochin.

To

Whereas you have been found, after examination, duly qualified to drive the engines of a motor-vessel or steam-vessel having engines of 40 brake/15 nominal horsepower or under plying in the Port of Cochin, I do hereby grant you this permit.

Given under my hand and seal.

Principal Officer,
Mercantile Marine Department,
Madras District.

This day of 195

No. of permit

Bearer son of by caste

Date of birth

Place of birth

Present residence

Height

Personal marks.

Signature.

N.B.—Any person other than the owner thereof becoming possessed of this permit is required to transmit it forthwith to the Principal Officer, Mercantile Marine Department, Madras District, Madras.

Issued at on the 19 .

REGISTERED.

Principal Officer,
Mercantile Marine Department,
Madras District.

PORTS

New Delhi, the 23rd March 1950

No. 19-P(82)/48.—In exercise of the powers conferred by sub-section (1) of section 35 of the Indian Ports Act, 1908 (XV of 1908), the Central Government is pleased to direct that with effect from the 1st April, 1950 the fees for pilotage shall be levied at the Port of Kandla at the following rates:—

- (a) For vessels of 2000 tons gross or below, Rs. 75/- per vessel each way.
- (b) For vessels above 2000 tons gross, Rs. 100/- per vessel each way.

Provided that the above fees shall be subject to a surcharge of 25 per cent. during the period of the monsoon from the 15 May to the 30th September every year.

NOTE 1.—When a Pilot boards an outgoing vessel in accordance with a requisition and is informed that his services are not required, an attendance fee of Rs. 15 shall be charged.

NOTE 2.—When a Pilot goes out to pilot an incoming vessel at the Pilot Station in accordance with the requisition, full pilot fees will be charged if the vessel has not arrived.

J. K. ATAL, Dy. Secy.

PORTS

New Delhi, the 24th March 1950

No. 14-M(46)/48.—In exercise of the powers conferred by clause (3) of section 3 of the Indian Ports Act, 1908 (XV of 1908), the Central Government is pleased to authorise Mr. T. C. Prosser to pilot vessels in the Hooghly area as defined in the Calcutta Port (Pilotage) Act, 1948 (XXXIII of 1948).

T. S. PARASURAMAN, Dy. Secy.

MINISTRY OF COMMUNICATIONS

New Delhi, the 20th March 1950

No. 10-A/5-49(i).—In exercise of the powers conferred by section 5 of the Indian Aircraft Act, 1934 (XXII of 1934), the Central Government is pleased to direct that the following further amendment shall be made in the Indian Aircraft Rules, 1937, the same having been published as required by section 14 of the said Act, namely:—

In Schedule V to the said Rules, in the table in paragraph 1 of Section B, for the entries in the

second column relating to items D and E, the following entries shall respectively be substituted namely:—

15,001 - 27,000 lbs.

27,001 - 50,000 lbs.

No. 10-A/5-49(ii). In exercise of the powers conferred by rule 160 of the Indian Aircraft Rules, 1937, the Central Government is pleased to cancel the notification of the Government of India in the Ministry of Communication No. 10-A/5-49 dated the 22nd September 1949.

P. K. ROY, Dy. Secy.

POSTS AND TELEGRAPHS

New Delhi, the 18th March 1950

No. PHA-2040/49.—In exercise of the powers conferred by section 7 of the Indian Telegraph Act, 1885 (XIII of 1885), the Central Government is pleased to direct that with effect from the 1st April 1950, the following amendment shall be made in the Indian Telegraph Rules, 1933 namely:—

In the said Rules—

For the "Short Title and Extent" under Preliminary the following shall be substituted, namely:—

"Short title and extent.—These rules may be called the Indian Telegraph Rules, 1933. They extend to the whole of India."

K. V. VENKATACHALAM, Dy. Secy.

MINISTRY OF WORKS, MINES AND POWER

New Delhi, the 25th March 1950

No. P. 104.—The following draft of a certain further amendment to the Carbide of Calcium Rules, 1937, which it is proposed to make in exercise of the powers conferred by section 4 and sub-section (1) of section 29 of the Petroleum Act, 1934 (XXX of 1934) as applied to the Carbide of Calcium by the notification of the Government of India in the late department of Industries and Labour No. M826(1), dated the 15th October, 1938 is published as required by sub-section (2) of the said section 29, for the information of all persons likely to be affected thereby and notice is hereby given that the draft will be taken into consideration on or after the 15th April 1950.

Any objection or suggestion which may be received from any person with respect to the said draft before the date specified will be considered by the Central Government.

Draft Amendment

In rule 40 of the said Rules for the words "three rupees", the words "rupees five" shall be substituted.

M. MALHOTRA, Asstt. Secy.

New Delhi, the 24th March 1950

CENTRAL BOILER BOARD

No. EL-II/312/5.—In pursuance of clause (b) of regulation 2 of the Indian Boiler Regulations, 1924, the Central Boilers Board is pleased to recognise "The Authorized Boiler Testing and Inspection Association (Praha)—Prague (Czechoslovakia)" as an authority competent to grant a certificate in Form II annexed to the said Regulations.

N. P. DUBE,

Secy., Central Boilers Board

MINISTRY OF LABOUR

New Delhi, the 24th March 1950

Mines 156(6).—In exercise of the powers conferred by section 29 of the Indian Mines Act, 1923 (IV of 1923), the Central Government is pleased to direct that the following amendments shall be made in the Indian Coal Regulations, 1926, the same having been previously notified as required by sub-section (1) of section 31 of the said Act, namely:—

the said Regulations—

For sub-regulation (1) of Regulation 43, the following regulations shall be substituted, namely:—

43(1) The Board of Examiners may grant to any person holding a manager's certificate, or a surveyor's certificate, granted under any Act for the regulation of mines for the time being in force in any other country, a certificate of a similar class under these regulations, provided that the person satisfies the Board of Examiners with documentary evidence that he possesses the requisite experience, and produces a certificate of good character from his previous employer, if any, and provided further that he has undergone for a period of not less than six months a course of practical training in Indian Mines in the mine approved by the Chief Inspector for the purpose, and in the case of an applicant for a manager's certificate, has also passed such examination in Mining Legislation and Mine Management as the Board of Examiners may prescribe.

(1A) If a person from any other country intends to apply for a certificate referred to in sub-regulation (1), he shall, before commencement of his practical training in India, submit an application in the form set out in Schedule III to these regulations to the Chief Inspector, who may, before according approval, impose such conditions as he may consider necessary.

2. After Schedule II, the following Schedule shall be added, namely:—

SCHEDULE III

[See Regulation 43 (1A)]

Form of application for registration

1. Name, nationality and address of the applicant.
2. Age.
3. Full details of qualifications and previous mining experience.
4. Name of the mine or mines in the Indian Dominion in which the training is desired.
5. The capacity or capacities in which it is proposed to obtain the training.
6. Whether the owner, agent or manager of the mine has agreed to the training.
7. Date on which it is proposed to commence training.
8. Any other relevant information which the applicant may like to mention.

Signature of applicant.

Date

P. N. SHARMA, Under Secy.

